

in Cider®

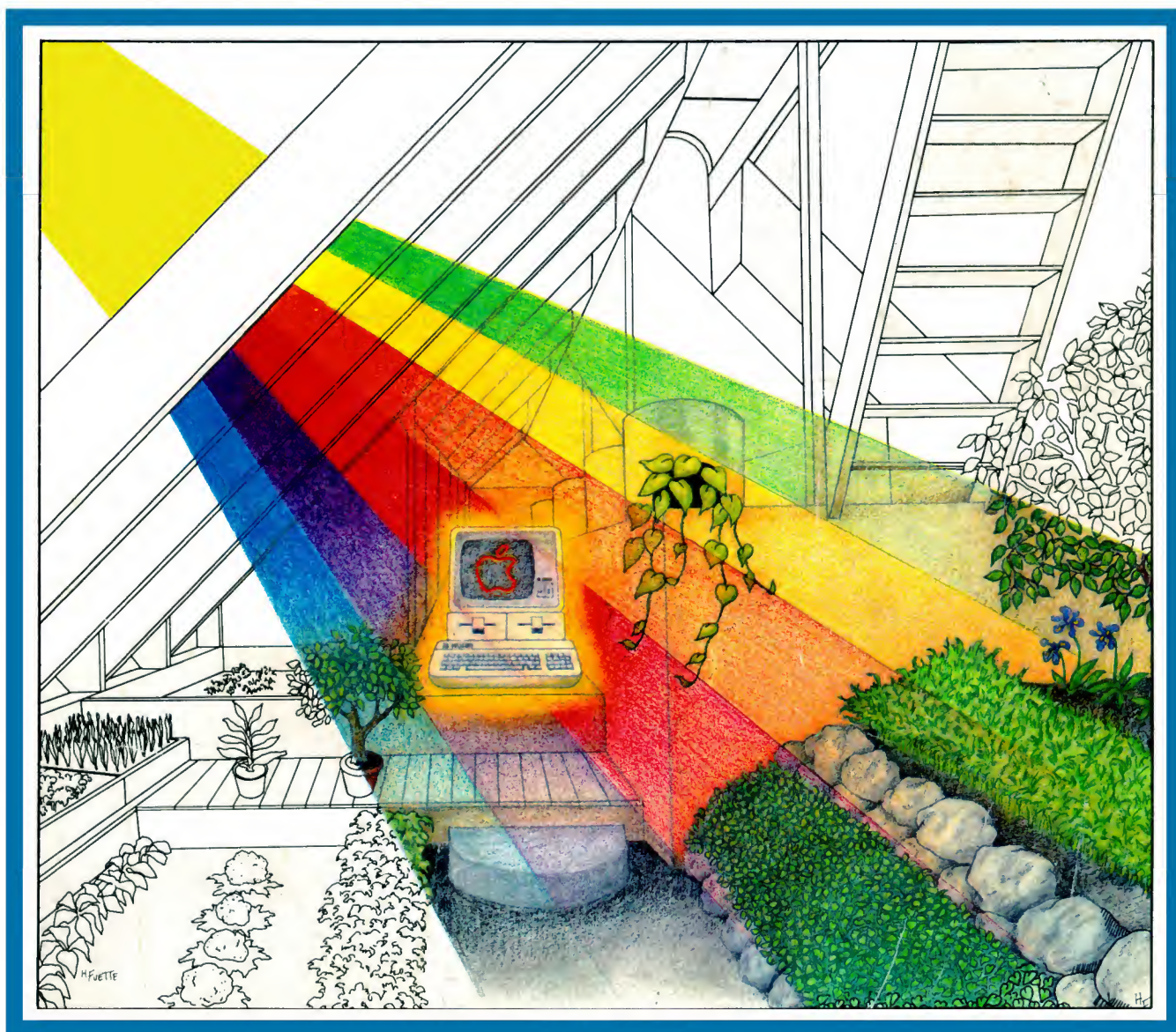
Green's Apple* Magazine

Pit Yourself Against Our Viper

February 1984 USA \$2.95

Energy: Apples Tap the Spectrum

- Apple & Sun, Inc.
- How to Slash Your Fuel Bills



- Charge Your Power Pack for Free

*Apple® is a registered trademark of Apple Computer Inc.





Reliable.

You can count on 3M diskettes. Day after day.

Just like the sun, you can rely on 3M diskettes every day. At 3M, reliability is built into every diskette. We've been in the computer media business for over 30 years. And we've never settled in. We're constantly improving and perfecting our product line, from computer tape and data cartridges to floppy disks.

3M diskettes are made at 3M. That way, we have complete control over the entire manufacturing process. And you can have complete confidence in the reliability of every 3M diskette you buy.

Apple® Compatible.

3M makes diskettes for use with Apple computers, including specially designed Fileware™ diskettes for the Lisa™ personal office system. Look in the Yellow Pages under Computer Supplies and Parts for the 3M distributor nearest you. In Canada, write 3M Canada, Inc., London, Ontario. If it's worth remembering, it's worth 3M diskettes.

Apple, Apple logo, Fileware and Lisa are trademarks of Apple Computer, Inc.

3M hears you...

Give Your Apple

68000 SPEED

SAYBROOK™ The Third Alternative

An increasing number of Apple II users have reached the limits of their machines' capabilities. These users face a dilemma: to upgrade to a new computer system or not to upgrade.

That, is no longer the question. Saybrook offers the third alternative.

SAYBROOK is the 68000 co-processor for the Apple II. Once inserted, Saybrook transforms the modest Apple into an awesome micro-mainframe computer, capable of 10-30 times the speed of the Apple, with twice the memory on-board!

By drawing upon state-of-the-art technology, Saybrook brings the Apple II user a new dimension of power as yet unknown.

HARDWARE

- Motorola MC 68000 32/16 bit microprocessor, 8 MHz (12.5 MHz upgrade available now.)
- 128K RAM on-board, expandable to 512K (off-board expansion to 16 megabytes)
- 24 hour time of day clock
- operating system timer (multiple user capability).

SOFTWARE

Standard—• Standard operating system: UCSD p-System Version IV.1 Pascal, FORTRAN-77, BASIC compilers *included* • Applesoft-compatible 68000 BASIC • 68000 Assembler • Apple peripheral compatibility including 80 column cards, 5¼ and 8 inch disk drives, RAM disks, and much more. **Optional**—• p-System application package including spreadsheet by Timberline and word processor by TICOM (both IBM P. C. software), FORTH. **Coming Soon:** CP/M-68K, UNIX.

BENEFITS

1. **Speed**—Saybrook's MC68000 32/16 bit microprocessor runs programs ten to thirty times faster than the Apple II.
2. **Memory**—Saybrook gives you 128K RAM on-board—expandable to 512K on-board. Saybrook is capable of off-board expansion up to 16 megabytes.
3. **Software**—Saybrook will run Apple Pascal, FORTRAN, and BASIC Apple programs—*ten to thirty times faster*. In addition, Saybrook accesses the enormous UCSD p-System library of software.
4. **Cost**—\$1,550 suggested retail price, (\$1,950 for 12.5 MHz Saybrook) includes the Saybrook 68000 co-processor with 128K RAM on-board; the UCSD p-System with Pascal, FORTRAN-77, and BASIC compilers. (\$1,425 value) In addition, Applesoft-compatible, 68000 BASIC is included. p-System application package, FORTH optional. CP/M 68K and UNIX will be available soon. Saybrook comes with a full six month parts and labor warranty. In addition, Saybrook customers are automatically included in the membership of the Saybrook users group.

Saybrook offers superior hardware, superior software, superior price. Saybrook is the third alternative.

For additional information on Saybrook, to order, or for the location of the dealer nearest you, call or write:



Analytical Engines, Inc.

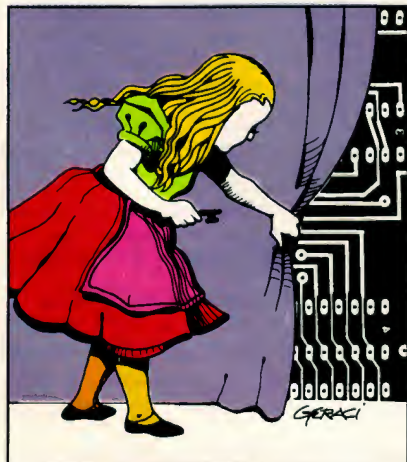
3415 Greystone, Suite 305 Austin, Texas 78731
(512) 346-8430

Circle 337 on Reader Service card.

Saybrook is a trademark of Analytical Engines, Inc. APPLE II is a registered trademark of Apple Computer, Inc. Lisa is a trademark of Apple Computer, Inc. UCSD p-System is a trademark of The Regents Of The University of California. CP/M-68K is a registered trademark of Digital Research. UNIX is trademark of Bell Laboratories.



Computer Music Worth Listening To, p. 68



inCider's inSidious inSolubles, p. 129

ARTICLES

The Solar Connection 34

There's much more to "passive solar" than the name might imply. Your Apple will help you unravel the subtleties of putting solar energy to work for you.

by Bill Smith

A Solar Survey 42

Building? Use your number-one sun to make that new structure more energy-efficient. Here's a list of "solar software" to help you compute the best design possible.

by Terry Brennan

F-Load: A Solar Design Tool 44

The author describes one of the better energy analysis programs written for the Apple. Its unique algorithm and its ability to calculate heating and cooling requirements make it a versatile choice.

by Joe Kohler

Tackling the Building Environment 52

An Apple-driven energy monitoring system in your place of business will pay for itself in short order.

by Nancy White Kelly and Carol M. Clerke

The Alternative Apple 58

A lack of utility power need not keep you from using your Apple anywhere you please. Just get a battery and inverter, and take charge of the situation.

by John Davidson

Computer Music Worth Listening To 68

Ever been assaulted by the cacophony known as computer music? Here's how to invoke a little-known law of nature and bring out the true musical genius hidden in your Apple.

by Jonathan Kandell

Serpent 76

Fair Warning: Don't try this stealthy little game if you are easily rattled.

by Dennis M. Marks

De-Bug Collection 78

One way to deal with—and learn from—your programming gaffes is to put them on file.

by Molly Watt

Load Machine Language and MBasic Together 88

One of the nice things about CP/M is its ability to facilitate sensible programming techniques. Here's an excellent example of just that.

by Paul M. Danzer



The Solar Connection, p. 34

DEPARTMENTS

Hot Cider <i>by Wayne Green</i>	6	Index to Advertisers	163
Fermentations	8	Hardware Reviews	164
Letters	10	Keywiz VIP; Microline 93 Printer	
The Applesoft Adviser Hi-Res Page 2 Text	16	Calendar	172
III's Company Why?	26	Cider Vinegar	174
Bent on Business Barring Your Buying	92	New Publications	176
Fudge It! Getting Shapely	104	New Software	178
The Apple Clinic Cursors—Foiled Again; Double Display; Resurrecting Track 35	114	New Products	184
Hints 'n' Techniques Get Control of Your Apple Dot Matrix Printer; Precision Dumping	120		
inCider's inSidious inSolubles	129		
Software Reviews Neuromuscular Concepts; Early Games Music; SAT Series; Financial Planning for VisiCalc; Crypto Cube; Arcademic Skill Builder in Language Arts; Microscopic Journey; PeachCalc; Home Health Disk; Peachtree's Accounts Payable; Peachtree's Accounts Receivable	130		
Book Reviews The Survival Kit for Apple Computer Games; The Complete Handbook of Personal Computer Communications; Everything You Need to Go Online with the World; Pascal Programs for Business; The Soul of CP/M; Hardware Interfacing with the Apple II Plus	156		

The cover art by Holly Fuette is taken from the Ark, a bioshelter at the New Alchemy Institute on Cape Cod. The Ark is a research facility integrating investigations into advanced solar design and engineering, energy conservation, horticulture and pest control, solar aquaculture, hydroponics and computer modeling. For more information write The New Alchemy Institute, 237 Hatchville Road, East Falmouth, MA 02536.

inCider (ISSN #0740-0101) is published 12 times a year by Wayne Green Inc., 80 Pine St., Peterborough, NH 03458. Phone: 603-924-9471. Second class postage pending at Peterborough, NH, and additional mailing offices. Subscription rates in U.S. are \$25 for one year and \$53 for three years. In Canada and Mexico, \$27.97—one year only, U.S. funds drawn on a U.S. bank. Nationally distributed by International Circulation Distributors. Foreign subscriptions (surface mail), \$44.97—one year only, U.S. funds drawn on a U.S. bank. Foreign subscriptions (air mail), please inquire. In South Africa contact *inCider*, PO Box 782815, Sandton, South Africa 2146. All U.S. and Canadian subscription correspondence should be addressed to *inCider*, Subscription Department, PO Box 911, Farmingdale, NY 11737. Please include your address label with any correspondence. Postmaster: Send address changes to *inCider*, Subscription Services, PO Box 911, Farmingdale, NY 11737. Entire contents copyright 1983 by Wayne Green Inc.



The Alternative Apple, p. 58

inCider editorial offices
Pine Street
Peterborough, NH 03458
603-924-9471

EDITOR-IN-CHIEF
Linda Stephenson

MANAGING EDITOR
Peg LePage

SENIOR EDITOR
Paul C. Quinn

REVIEW EDITOR
Tom Woods

NEW PRODUCTS EDITOR
Joan Witham

ASSISTANT EDITORS
Melody Bedell,
Sam Whitmore

TECHNICAL EDITOR
Robert M. Ryan

EDITORIAL DESIGN MANAGER
Susan Gross

EDITORIAL DESIGNER
Laura Landy

LAYOUT EDITORS
Joan Ahern, Phil Geraci,
Maurelle Godoy, Sue Hays, Judy Oliver,
Phyllis Pittet

PROOFREADERS
Peter Bjornsen, Harold Bjornsen,
Robin Florence

EDITORIAL DIRECTOR
WAYNE GREEN PUBLICATIONS GROUP
Jeff DeTray

PRODUCTION
Nancy Salmon, Director; Lahri Bond, Michael Ford,
Marjorie Gillies, Kimberly Nadeau, Lynn Simonson,
Ken Sutcliffe, Ad Coordinators: Paula Ramsey,
Patricia Bradley, Jean Southworth;
Advertising Production: Fiona Davies, Bruce Hedin,
Scott Philbrick, Jane Preston
FILM PRODUCTION
Donna Hartwell, Theresa Verville, Robert Villeneuve
PHOTOGRAPHY
Thomas Villeneuve, Supervisor; Sandra Dukette,
Nathaniel Haynes, Laurie Jennison, Sturdy Thomas
TYPESETTING
Sara Bedell, Supervisor; Darlene Bailey, Prem Gongaju,
Lynn Haines, Cynthia Letourneau, Kimberly Nadeau,
Debbie Nutting, Lindy Palmisano, Heidi N. Thomas,
Susan Weller
COPYWRITING
Steve Tripp, Chief;
Dale Tietjen
DESIGN
Christine Destremes, Creative Director;
Joyce Pillarella, Design Manager;
Holly Fuette, *inCider* Magazine Design Consultant;
Sue Donohoe, January Folsom, Patrice Scribner,
Sara Werninger, Administrative Assistants

Submissions: We're always looking for first-class manuscripts at *inCider*. If you have written a useful or entertaining program for the Apple, why not share it? Conversions of programs published in *80 Micro* or *Microcomputing* are also welcome. We'll consider publication of any material for the Apple. Guidelines for budding authors are available—just address an envelope to yourself and include it with your request.

Fermentations

by Peg LePage
inCider staff

Apple Energy

It is the middle of winter for those of us in the Northern Hemisphere, a time when the need for energy is particularly on our minds. And, when people think of energy these days, it's often of conservation and alternative energy sources. We at *inCider*, therefore, decided it would be timely and informative to look at how microcomputers are being used in these closely allied fields.

According to Bill D'Alessandro of *Solar Age* magazine, more and more architects and builders are using micros to help design new construction and alterations (retrofits) that use energy conservation and alternative energy strategies to make them more energy, and therefore cost, efficient. Often these people first bought a microcomputer for office record keeping. Now they are discovering the power of their machine in professional applications.

The power lies in the ability of a computer to model a structure in various configurations by manipulating a number of parameters simultaneously, and by doing the accompanying raft of calculations in a short time. This type of mathematical analysis could take days, or even be impossible, by hand.

The bulk of energy conservation and alternative energy activity is occurring in the area of solar construction and particularly in passive solar systems where a building itself acts as a collector of solar radiation. The selection of software available reflects this bias. Relatively smaller amounts of software apply to active solar in which radiation is collected in independent units and transported as heat to the structure, as well as to daylighting, photovoltaic generation of electricity, wind and water power, and others. We have, therefore, laid our emphasis on passive solar.

Most energy software is written—and priced—for the professional; and professionals suggest that this is necessarily so because of the expertise needed to prepare input and interpret output. However, software designed and priced for the layperson is appearing. Two packages are mentioned in "A Solar Survey" in this magazine. *inCider* plans to publish reviews of these programs in the near future.

In the present issue, you might turn first to "The Solar Connection" by Bill Smith for a primer on passive solar design. He describes various types of passive systems from the familiar greenhouse to the water wall, parameters and calculations involved in their analysis and design, and the input and output of a typical passive solar design program.

Terry Brennan then makes "A Solar Survey" of much of the software currently available for solar design with an Apple. He includes a brief description of each, as well as information on where to get it and how much it costs. Most are passive design programs, but he does mention active, photovoltaic and daylighting packages as well.

Joe Kohler focuses on one of the most comprehensive and powerful of these packages with an in-depth review entitled "F-Load: A Solar Design Tool." This review is valuable not only for its description and evaluation of a specific program, but as a detailed look at how a solar design program works.

While our emphasis has been on passive solar design, we have included two other articles to tweak your fancy. In "Tackling the Building Environment," co-authors Nancy White Kelly and Carol M. Clerke relate how one man and his Apple are helping a number of businesses lower

their expenses by cutting peak electrical usage. Carl Rutherford analyzes a customer's energy needs, and installs and then maintains, by modem, a system that monitors and controls lights and electrical equipment so power consumption never goes beyond a specified level.

For a change of pace, suppose you have built a home or business that uses an alternative source of electricity—photovoltaic cells, wind or water power—to produce direct current to charge storage batteries. How could you run your Apple from such a system? John Davidson reveals an answer in "The Alternative Apple," and also suggests that, thus equipped, you could take your electronic friend places you'd never dreamed.

As you read about the software mentioned in these articles, please keep in mind that whether it is designed for professionals or laypeople, care in preparing input is essential. "Garbage in, garbage out" means lots of money over the years when you're building or retrofitting a structure. The layperson, unfamiliar with the particulars of solar design, should also understand that considerable effort will be involved in researching this input for accuracy and in assessing the implications of the output for actual construction. It may be necessary to seek assistance.

Featuring Apples and energy in this issue of *inCider* is meant as a beginning rather than a *fait accompli*. We hope to publish articles on this subject on a continuing basis. Please let us know if such articles are of interest to you, and what kinds in particular would be most helpful. Also, please let us know about software—commercial, nonprofit or homemade—that we have not mentioned. Of course, queries on manuscripts are always welcome, too. ■

PRO-MODEM 1200



Circle 268 on Reader Service card.

It's about time.

Time for your computer to make the telephone connection — with an intelligent, full 212A 300/1200 baud modem — with a real time clock/calendar — and with the capability to expand into a complete telecommunications system. It's time for PRO-MODEM 1200. Much more than just a phone modem.

When you're on-line, time is money. PRO-MODEM telecommunication systems help you save. By monitoring the duration and cost of your phone calls. And by sending and receiving messages, unattended, at preset times when the rates are lower. . . with or without your computer.

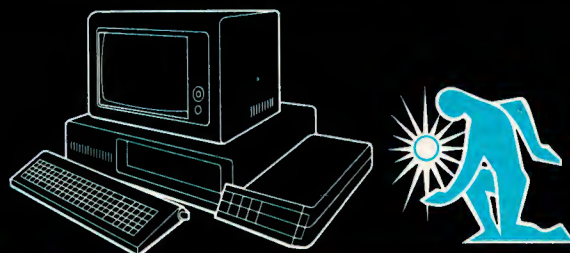
Compare the \$495 PRO-MODEM 1200 with any other modem on the market. For example, you'd have to buy both the Hayes Smartmodem 1200 plus their Chronograph for about \$950 to get a modem with time base.

PRO-MODEM 1200 is easy to use. A convenient "Help" command displays the Menu of operating command choices for quick reference whenever there's a question about what to do next. Extensive internal and remote self-diagnostics assure that the system is operating properly. Some of the other standard features include Auto Answer, Touch Tone and Pulse Dialing, and Programmable Intelligent Dialing.

PRO-MODEM does more. It lets you build a full telecommunications system with features like Auto Dialer, Incoming and Outgoing Message Buffering, Business/Personal Phone Directory, Programmable Operating Instructions, a 12-Character Alpha-Numeric Time and Message Display, and versatile PRO-COM Software. PRO-MODEM commands are Hayes compatible so you can use most existing telecommunications software without modification.

There's much more to the PRO-MODEM story. See your local dealer for complete details. He'll show you how to save time. And money.

Prometheus Products, Inc., 45277 Fremont Blvd., Fremont CA 94538, (415) 490-2370



PROMETHEUS

Letters

New Wizardry Techniques

Following are some changes I made to Kerry Lantz's "Wizfix" article that appeared in the August issue. Basically, what I wanted to change was the fact that I could not choose the age or quality points individually for the characters. In other words, it was either be 18 years old or remain as you are; and be 18 in every quality or remain as is.

A word about the ages I've chosen: As you'll see, I've arbitrarily used a minimum of 18 and a maximum of 65. Those ages can be altered to suit the individual simply by changing lines 550 and 551 to reflect whatever pa-

rameters are desired. As Kerry pointed out in a letter to me, Wizardry will accept ages much below 18, and while it will accept old characters, it doesn't treat them well at all. Even 65 is much too old for a character to be effective. But I like the idea of choices and the ability to experiment. So feel free to mess around.

The subroutines I wrote reside at lines 548 to 593 and will overwrite lines 550 and 555.

First, change the word YOUTH in line 365 to AGE. Then change line 445 as in Listing 1.

Then comes the fun part. The new subroutines follow. Lines 548 to 554

handle the choice of age. Lines 555 to 593, as in Listing 2, handle the individual characteristics.

Alan Popow
#1107-9810-105 Street
Edmonton, Alberta
T5K 1A6

I would like to submit the following changes/additions to the "Wizfix" program by Kerry Lantz (August). See Listing 3.

Lines 203, 204 and 850 print the character's current name and password. They also zero the remaining positions in those fields. Wizardry does not set those positions to zero.

```
445 ON B GOSUB 500,505,510,515,520,525,530,535,540,545,548,555:
      GOSUB 200:GOSUB 300:GOTO 410
```

Listing 1.

```
548 POKE 35,24:HOME:PRINT TAB(18) "AGE"
549 PRINT TAB(18) "----":PRINT:PRINT:PRINT:PRINT "PRESENT AGE IS":
      OL
550 VTAB 15:INPUT "NEW AGE FOR CHARACTER (MIN 18,MAX 65)":AN#: AN =
      VAL (AN#)
551 IF AN<18 OR AN>65 THEN 550
552 NG = INT (AN/4)
553 IF NG * 4 + NG - 1 > AN THEN NG = NG - 1:GOTO 553
554 POKE BASE + 39,NG:POKE BASE + 38,(AN - (NG * 4 + NG - 1))*52:
      GOSUB 225:GOSUB 350:POKE 35,15: RETURN
555 POKE 35,24:HOME:PRINT TAB(15) "QUALITIES":PRINT TAB(15)
      "-----":PRINT:PRINT
556 PRINT "A) STRENGTH "I1:HTAB 22:PRINT "D) VITALITY "I1:
      PRINT:PRINT "B) INTELLIGENCE "I1:HTAB 22:PRINT "E) AGILITY
      "I1:PRINT:PRINT "C) PIETY "I1:HTAB 22:PRINT "F) LUCK "I1:
557 VTAB 18:PRINT "CHOOSE WHICH ONE YOU WISH CHANGED":PRINT
      "<RETURN> TO GO BACK TO PAGE 1":POKE -16368,0:GET B#: B =
      ASC(B#) - 64:PRINT
558 IF B = - 51 THEN GOSUB 350:POKE 35,15: RETURN
559 IF B < 1 OR B > 6 THEN 557
560 ON B GOTO 565,570,576,580,585,591
565 VTAB 18:CALL -958:VTAB 20:INPUT "CHANGE STRENGTH TO: (MIN
      6,MAX 18)":SN#: SN = VAL (SN#)
566 IF SN < 6 OR SN > 18 THEN 565
```

```
567 POKE BASE + 44,PEEK (BASE + 44) + SN - ST:GOSUB 230:GOTO
      555
570 VTAB 18:CALL -958:VTAB 20:INPUT "CHANGE I.O. TO: (MIN 6,MAX
      18)":ON#:ON = VAL (ON#):IF ON < 6 OR ON > 18 THEN 570
571 PK = 32 * (ON - 8 * (PEEK (BASE + 45) - INT (PEEK (BASE + 45)
      / 4) * 4)) + (PEEK (BASE + 44) - 32 * INT (PEEK (BASE + 44) /
      32))
572 IF PK < 0 THEN PK = PK + 256:POKE BASE + 45,PEEK (BASE + 45)
      - 1:GOTO 572
573 IF PK > 255 THEN PK = PK - 256:POKE BASE + 45,PEEK (BASE + 45)
      + 1:GOTO 573
574 POKE BASE + 44,PK
575 GOSUB 230:GOTO 555
576 VTAB 18:CALL -958:VTAB 20:INPUT "CHANGE PIETY TO: (MIN 6,MAX
      18)":PN#: PN = VAL (PN#)
577 IF PN < 6 OR PN > 18 THEN 576
578 POKE BASE + 45,PN * 4 + (PEEK (BASE + 45) - INT (PEEK (BASE +
      45) / 4) * 4):GOSUB 230:GOTO 555
580 VTAB 18:CALL -958:VTAB 20:INPUT "CHANGE VITALITY TO: (MIN
      6,MAX 18)":VN#: VN = VAL (VN#)
581 IF VN < 6 OR VN > 18 THEN 580
582 POKE BASE + 46,PEEK (BASE + 46) + VN - VI:GOSUB 350:GOTO
      555
585 VTAB 18:CALL -958:VTAB 20:INPUT "CHANGE AGILITY TO: (MIN
      6,MAX 18)":LN#:LN = VAL (LN#):IF LN < 6 OR LN > 18 THEN 585
586 PK = 32 * (LN - 8 * (PEEK (BASE + 47) - INT (PEEK (BASE + 47)
      / 4) * 4)) + (PEEK (BASE + 46) - 32 * INT (PEEK (BASE + 46) /
      32))
587 IF PK < 0 THEN PK = PK + 256:POKE BASE + 47,PEEK (BASE + 47)
      - 1:GOTO 587
588 IF PK > 255 THEN PK = PK - 256:POKE BASE + 47,PEEK (BASE + 47)
      + 1:GOTO 588
589 POKE BASE + 46,PK
590 GOSUB 230:GOTO 555
591 VTAB 18:CALL -958:VTAB 20:INPUT "CHANGE LUCK TO: (MIN 6,MAX
      18)":LN#: LN = VAL (LN#)
592 IF LN < 6 OR LN > 18 THEN 591
593 POKE BASE + 47,LN * 4 + (PEEK (BASE + 47) - INT (PEEK (BASE +
      47) / 4) * 4):GOSUB 230:GOTO 555
```

Listing 2.

ADD:

```
203 TP = PEEK (BASE + 16):FOR K = (16 + TP + 1) TO 31:
      POKE BASE + K,0:NEXT
```

```
204 TN = PEEK (BASE):FOR K = TN + 1 TO 15:
      POKE BASE + K,0:NEXT
```

CHANGE 660-662 to:

```
660 VTAB 21:HTAB 1:PRINT "TYPE NUMBER OF OBJECT TO DROP":
      PRINT " (0 TO EXIT)":POKE -16368,0:GET B$:
      B = ASC (B$):IF B < 48 OR B > 56 THEN 660
```

```
661 B = B - 48:IF B > T(0) THEN 660
```

```
662 IF B = 0 THEN GOTO 652
```

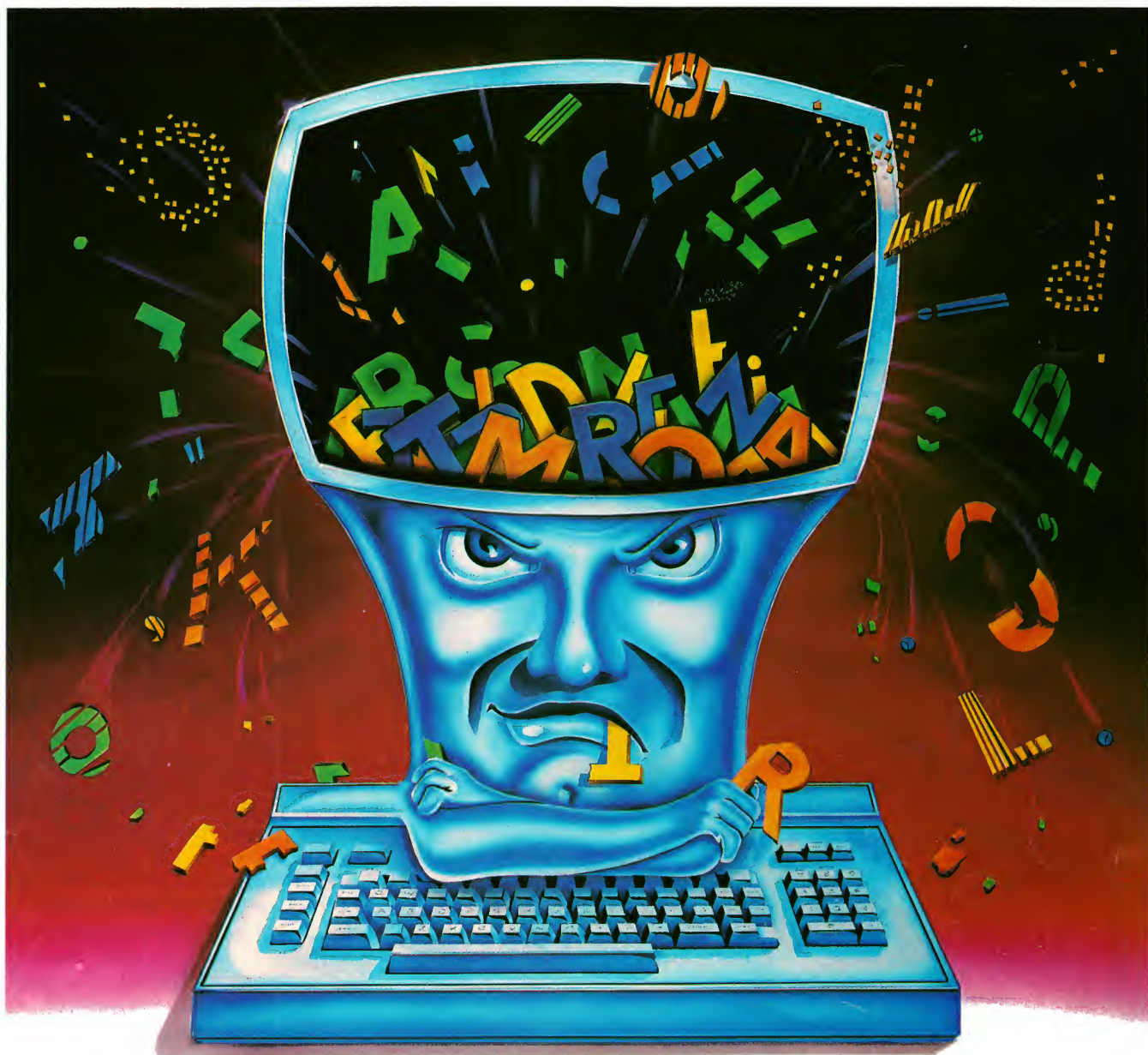
```
663 FOR K = B TO 8:POKE BASE + 58 + 8 * K,PEEK (BASE +
      66 + 8 * K):NEXT:POKE BASE + 122,0
```

```
664 POKE BASE + 58,PEEK (BASE + 58) - 1:GOTO 652
```

CHANGE 850 to:

```
850 FOR K = 1 TO 20:POKE 47084,TRK(K):POKE 47085,SEC(K):
      CALL 768:N$(K) = "":TN = PEEK (BASE):FOR L = 1 TO TN:
      N$(K) = N$(K) + CHR$(PEEK (BASE + L)):NEXT:NEXT:
      RETURN
```

Listing 3.



Does your word processor chop, slice, grind, shred, and purée?

All too many word processing programs can make mincemeat out of your ideas. They force you to adapt your writing to the computer's needs, when it should be the other way around.

That's why you need *THE WRITE STUFF*™, the word processing program designed for people who care more about words than processing. With *THE WRITE STUFF*, you don't have to relabel your personal computer keyboard or learn arbitrary



symbols. All you do is *write* and leave the processing to us. Making life easier is the reason you got a personal computer in the first place, isn't it? Just tell the machine what you want: centering, justifying, paginating, underlining or boldface, finding and replacing words, moving sections of your text, or undoing your last command. *THE WRITE STUFF* does all the things you'd expect from programs that cost up to five times as much. And that's no sliced baloney.

The Ultimate Word Processor for Home and Office

For the Apple® II plus and IIe. One disk drive, 64K, DOS 3.3 required. \$99.95 at computer stores, software retailers and bookstores, or call toll-free (800) 638-3030—in MD call collect (301) 824-7300

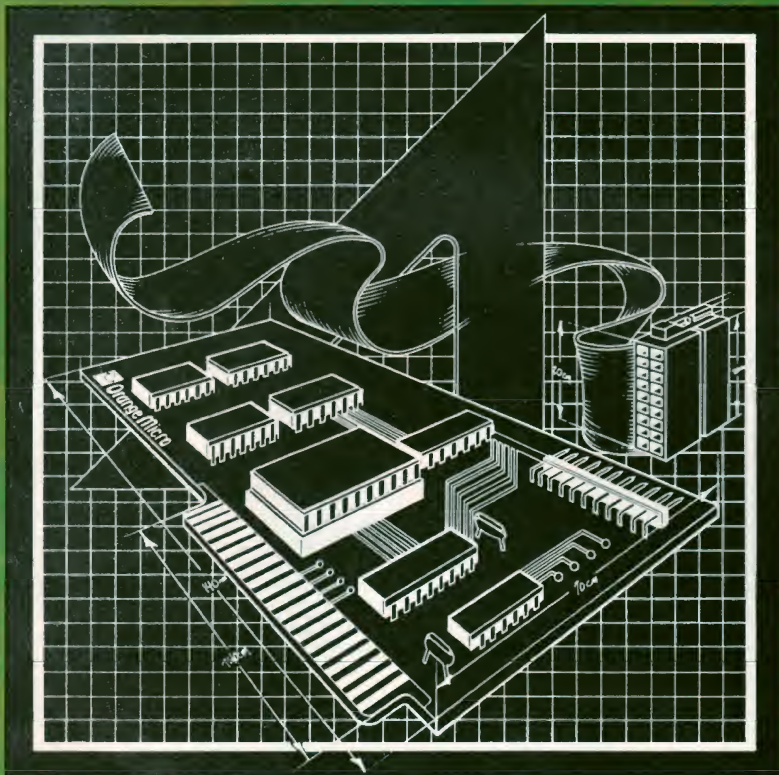
HARPER & ROW SOFTWARE

10 East 53rd Street, New York, N.Y. 10022

© Intentional Educations, Inc.

WANTED!

FOR LUCRATIVE MARKET
OPPORTUNITIES
YOUR NEW PRODUCTS,
HARDWARE DESIGNS, PROTOTYPES



REWARD:

Orange Micro has a history of success in bringing new and innovative products to market. If you've developed an innovative computer peripheral or circuit board, don't let it die; bring it to us. We have the capital and marketing know-how needed to make your innovation a successful and profitable product.

We have an industry proven track record. Consider our Grappler+ the world's #1 selling Apple® printer interface.

The skills that have made the

Grappler+ the industry standard can make a winner of your product too.

We are seeking hardware based peripheral products that are into the design stage and directed at the *Micro Computer Market*. If you have developed such a product and need a team of experts to bring it to market, we want to hear from you.

Royalties, license fees or outright purchases are negotiable.

All replies are treated confidentially and proprietary interests respected.

Attn: George Reid

Orange Micro, Inc.
1400 North Lakeview Avenue
Anaheim, CA 92807
(714) 779-2772



Orange Micro
Inc.

Circle 5 on Reader Service card.

© Orange Micro, Inc., 1983

Apple is a registered trademark of Apple Computers, Inc.

Letters

Therefore, a deleted password will show up in the character's stats in the published version of *Wizfix*. Similarly, if a character with a shorter name occupied the same area as a former character, the additional letters were displayed. After running *Wizfix* with these changes included, the name and password fields will be correct.

Lines 660 and 662 allow you to enter a 0 to exit from the "Drop an Item" screen if you change your mind about dropping an item. Line 661 checks to insure that you don't enter an item number greater than is currently in use.

William I. Walters
PO Box 805
APO New York 09021

The Common Code

I have enjoyed your publication so much that I just renewed my subscription for three years!

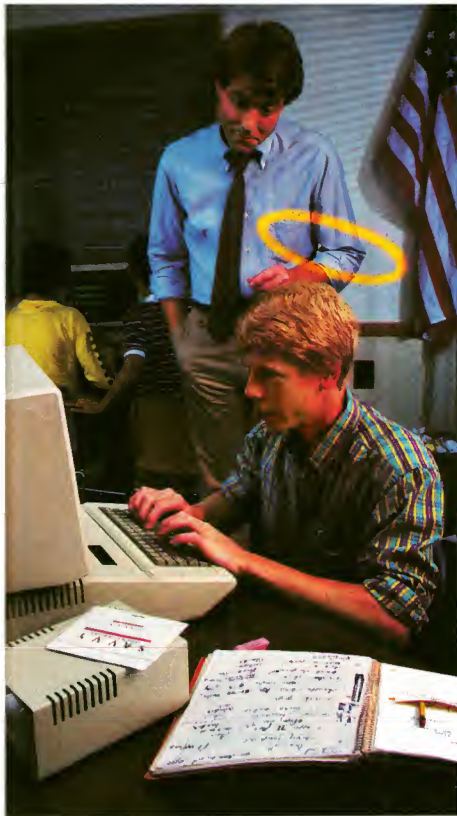
I just purchased a "Magic Wand Speak & Learn" bar code reader by Texas Instruments. The unit was on sale for \$29.93, and I purchased it for my five-year-old son, Brian. If they can produce a bar code reader that can read bar code in children's books, then something a little more elaborate could be made for the Apple.

I am also interested in finding out what type of printer and software are available that can print out bar code to make up labels for back issues and other uses. Could a bar code daisy wheel be developed to be used with existing printers?

George Cawthorne
1721 East Kensington
Mt. Prospect, IL 60056

There has been some discussion in the Letters section of *inCider* about using bar code to encode the program listings published by the magazine. It could well be practical to combine bar codes with an inexpensive device sold commercially or a smaller unit made at home from parts cannibalized from something like a Texas In-

Address letters to: Letters to the Editor, inCider, Editorial Offices, Pine St., Peterborough, NH 03458.



Meet Tom, Dick and Jeri. Before they had SAVVY® they were just like you.

Introducing three new integrated personal computer language/database systems that recognize ... to err is human and to forgive is SAVVY.

SAVVY is the most "forgiving" software ever developed for your Apple IIe®, II Plus®, or Apple-compatible computer. It's a database system, natural programming language, file manager and operating system all in one. And because SAVVY can recognize your personal word patterns, you can misspell, mistype, abbreviate, or rephrase and still successfully command your computer.

SAVVY One™ is for single disk systems. It's ideal for use in the home or classroom by users new to personal computing.

SAVVY Pro™ for multiple or hard disk systems can be used by experienced software program developers to create integrated applications.

Business SAVVY provides easy-to-use application programs, such as accounts payable, accounts receivable, general ledger, payroll, inventory and document writer. It's also for use with multiple or hard disk systems.

Call 800-551-5199 to arrange for a free demonstration of SAVVY One, SAVVY Pro or Business SAVVY at your local computer store. In New Mexico, call 505-242-3333. Or for more information circle and return the reader service card.

SAVVY is a product of Excalibur Technologies Corporation, 800 Rio Grande Boulevard N.W., Mercado 21, Albuquerque, New Mexico 87104.



SAVVY®

A product of **Excalibur**
TECHNOLOGIES CORPORATION

SAVVY is a registered trademark of Excalibur Technologies Corporation. SAVVY One and SAVVY Pro are trademarks of Excalibur Technologies Corporation. Apple IIe and II Plus are registered trademarks of Apple Computer Inc.

Plain Talk About Printers...

DOT MATRIX

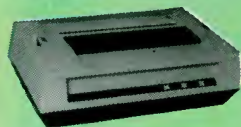
There've been some big changes in the low-end printer market. There are interesting new printers from Panasonic, Tally & Toshiba, plus new entries by old stand-bys. Compatibility with **software** remains your biggest hurdle.

ANADIX

DP-9501B	\$1119.88
DP-9620B	\$1199.88
DP-9625B	\$1299.88
WP-5000	\$2349.88

C. ITOH*

Prowriter



C. Itoh's Prowriter (120 cps) offers you 10, 12, & 16 cpi, a proportional/correspondance font, dot graphics (160x144 dpi), friction/tractor feed & a 1.5K buffer. The Prowriter 2 is the 136 column version.

Prowriter	\$339.88
Prowriter 2	\$719.88

DIABLO

Series 32	\$1049.88
-----------	-----------

EPSON*

FX/RX Series

The RX-80 & RX-80 F/T (100 cps) are upgraded versions of the MX Series and are fully code-compatible with all software for the MX-80 with Graftax.

Call for specs & delivery on the FX-80 (160 cps) and FX-100. RX/FX Epso is. \$CALL

IDS/DATA PRODUCTS

Prism 80	\$1079.88
w/4-color	\$1439.88
Prism 132	\$1239.88
w/4-color	\$1669.88
MicroPrism	\$529.88

INFORUNNER

Riteman	\$329.88
---------	----------

MANNESMANN TALLY

MT-160 L/180 L Spirit



The MT-160L (160 cps) offers 10, 12, 17 & 20 cpi, a superior correspondence font, parallel and RS-232C interfacing (controlled from the front panel), plus friction/tractor feed. The MT-180L is the 136 column version.

The Spirit (80 cps) has 10, 12 & 17 cpi fonts, italics, friction/tractor feed, and a unique square-wire printhead that produces sharp output.

MT-160 L	\$649.88
MT-180 L	\$849.88
MT-Spirit	\$329.88

OKIDATA*

Microline Series



The Microline 92 (80 col) & 93 (132 col) are ideal for word processing.

They offer a 160 cps d aft mode, a 40 cps correspondence mode, 10, 12 & 17 cpi (w/double-width), pin/friction feed (tractor is optional on the 92) & dot-addressable graphics (120 x 144). Centronics parallel interface is standard.

The Microline 84 Step 2 (132 col) features 200 cps, 10, 12, & 17 cpi (w/double-width), a correspondence mode & dot addressable graphics. Parallel interface is standard.

The Microline 82A (80 col) & 83A (132 col) are data crunchers period. They print 120 cps, at 10 & 16 cpi (5/8 double-width). Dot-addressable graphics are optional. Microlines. \$CALL

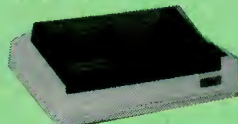
PANASONIC

KX-P1090

The KX-P1090 (80 cps) features 10, 12, 17 cpi, italics, sub/super scripts, underlining, dot graphics plus some interesting print modes. It uses most Epson text code, so it should be easily installed on most word processing software. Quieter than most printers. KX-P1090. \$349.88

STAR MICRONICS*

Gemini 10X/15 Delta 10/15



The Gemini 10X (120 cps) features 10, 12, 17 cpi, italics, a correspondence font, 120 x 144 dpi graphics matrix, a 1K buffer & friction/tractor feed. The Gemini 15 is the 132 column version.

Star's Delta 10 (160 cps) features parallel and RS-232C interfaces w/8K buffer, 10, 12 & 17 cpi, italics, dot graphics (120 x 144 dpi) & friction/tractor feed. The Delta 15 is a 136 column version. Gemini 10X. \$299.88 Gemini 15. \$419.88 Delta 10. \$529.88 Delta 15. \$CALL

TOSHIBA

P1350

The P1350 (192 cps) features 132 columns, 10 & 12 cpi (plus double-width) & an exceptional near-letter quality font with proportional spacing. It has sub/superscripting features plus dot graphics (180 x 180 dpi). Parallel or RS-232C interface (specify). P1350. \$1759.88

LETTERQUALITY

C. ITOH

F10/A10 StarWriter PrintMaster



The C. Itoh F10 StarWriter (40 cps) uses Qume code, Diablo wheels & ribbons, 10 or 12 pitch, 6, 8 or 1/48" line space. The Printmaster has the same specs, but prints at 55 cps.

The A10 Starwriter also has the same specs, but it's slower (20 cps). The Tractor and Sheet Feeder work on all models. F10 Starwriter. \$1219.88 A10 Starwriter. \$609.88 Printmaster Parallel. \$1569.88 Tractor Feed. \$289.88 Sheet Feeder. \$619.88

COMREX

CR-1	\$849.88
CR-1 Tractor	\$104.88
CR-2	\$509.88
CR-2 Tractor	\$94.88

DIABLO

620 (RS-232C)	\$999.88
630 (PC)	\$1979.88

NEC

Spinwriters

The new 2000 Series are slower (20 cps), but they've retained all the quality of the 3500/7700 Series. Uses the same thimbles & ribbons. 2010/2030. \$879.88 3530. \$1639.88 7710/7730. \$2159.88

SILVER REED

EXP-550/500



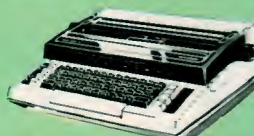
The Silver Reed EXP-550 (17 cps) is a 132 column letter-quality printer with 10, 12 or 15 pitch, sub/superscript, underlining and true Diablo 1610 emulation, making it compatible with most word processing software. It's friction fed, and it features a page injector; an optional tractor is also available.

The EXP-500 (12 cps) is a 100 column letter-quality printer with the same specs as the EXP-550, but slower and without page inject.

EXP-550 (Parallel)	\$669.88
EXP-550 Tractor	\$139.88
EXP-500 (Parallel)	\$439.88
EXP-500 Tractor	\$129.88
3 Wheel Set	\$49.88

SMITH-CORONA

Messenger*



The Memory Correct III Messenger (12 cps) is a daisy-wheel printer with a typewriter keyboard & parallel/RS-232C interface. 10.5" writing line (105 col); 10, 12 & 15 cpi, 6/8 line spacing, backspace/underline, sub/superscripts & auto-correct on. It comes complete with parallel/serial interface module. Memory Correct III Messenger. \$599.88

INTERACTIVE STRUCTURES

Pkaso

The Pkaso is our interface card of choice. It's dedicated to a specific printer, which means you'll get to use all its features. Printers covered include the C. Itoh/NEC/Apple DMP, Epson MX/FX Series, Gemini 10X/15X, IDS Prism Series*, Okidata 80/90 Series & Centronics Series. Pkaso Interface. \$139.88 *IDS Prism (Color). \$159.88

ORANGE MICRO

Grappler +

Grappler	\$149.88
Bufferboard (16K)	\$149.88
Buffered Grappler	\$179.88

* indicates THE BOTTOM LINE Extended Warranty Plan is available for these printers. Call (603) 881-9855 for details.

struments educational toy that reads bar code and converts it to music and/or words. Who knows, you might even be able to sell singing commercials to your advertising accounts. The possibilities are limitless.

Ralph C. Moredock
4044 Leymoine Way
Campbell, CA 95008

Glamour vs. Good?

Hi. And congratulations. I think the magazine is improving, and I'm considering renewing my subscription. It sure would help if there were more about my Apple III, though.

I really get disgusted when new, cute and glamorous get all the press and good is ignored. There should be at least five times as many Apple IIIs in service now as there currently are—and a lot more software available, too—but there hasn't been much support by the press or by Apple...marketing experts they ain't.

Another gripe is that it took me five minutes to figure where to send this letter. How about putting the address at the top of the Letters page instead of six pages away.

Roger T. Harrier
Community Animal Hospital
833 North 12th Ave.
Pocatello, ID 83201

A New Twist

In some tips to economy-minded computer enthusiasts, I have often seen techniques for utilizing the unused half of a printer ribbon; this usually involves giving the ribbon a half-twist to invert the printing surface.

With such adhesives as Pentel Roll and Glue, it is possible to cut the fabric ribbon, give it a half-turn and glue the two ends back together. This creates a Mobius strip which automatically uses the upper and lower surfaces of the printer ribbon without further changing.

I have used this technique successfully with MX-80 and MX-100 printers.

Francis N. Fitzgerald
16 Forest St.
Middleton, MA 01949

A Fool-Proof Rip-Off Scheme

Some printers have a built-in tear bar that allows you to easily pull off a piece of tractor feed paper. And some, like mine, do not. I always had the problem of trying to tear the paper off and having it rip right down the middle. Well, no more. I discovered that an ordinary wire coat hanger makes a great tear bar. Just pass the end of the paper through the middle of the hanger before you start printing. When you're through printing, fold the perforation at the bottom of the last page around the straight wire of the hanger. Now grab the upper part of the hanger in one hand while grasping both ends of the paper in the other and gently pull. The hanger will neatly separate the paper at the perforation.

Richard Kramer
Riverdale, NY

Diskouraging

When opening a new box of disks, I always open the bottom flap and then tape it back up with the little flap sealed to the outside of the box. This precludes the possibility of damaging disks when you attempt to put ten back in the box at once; one always seems to hang up on that little flap, which ordinarily is tucked inside.

Carl C. Crell
110 Hilltop Road
Oxford, OH 45056

Too Many Epson Articles

I am a plastic surgeon and an amateur (but addicted) Apple IIe freak. My system uses a couple of disk drives and an Apple Dot Matrix Printer. We also have an Epson printer in one of our laboratories.

The Epson is a great printer—perhaps better than the Apple dot matrix—but *inCider* should consider publishing programs, tips or whatever directed towards Apple dot matrix users, rather than so much Epson-oriented material.

A. Griswold Bevin, M.D.
Route 4, Box 300
Chapel Hill, NC 27514

MONITORS

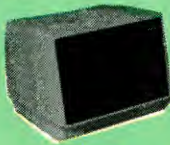
NEC

JB-1205M

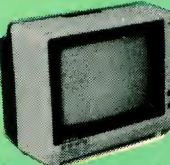


Slick design and specifications for an amber monitor. NEC's JB-1205M has an 18-20 MHz bandwidth and a crisp, clear amber display. Standard 80 column by 24 line (12" diagonal screen). The JB-1201 is the green screen version.
JB-1205M (amber).....\$179.88
JB-1201M (green).....\$169.88

AMDEK



300 (12" green).....\$149.88
300A (12" amber).....\$159.88



Color II+ (Com).....\$319.88

Modems

US ROBOTICS

Password



The Password is a direct connect originate/answer type modem with 0-300 & 1200 baud capability (Bell 212A compatible). Features auto dial/answer, auto mode/ speed select, full/half duplex (local echo), DTR override, RS-232C pins 2 & 3 reversible & audio phone line monitor. Comes with an RS-232C cable, power supply & modular cable. RS-232C interface for Apple II optional.
Password.....\$379.88

MPI

RS-232C Card.....\$99.88



DC HAYES

Micromodem IIe

The Micromodem IIe is an originate/answer, auto dial/answer, full/half duplex internal modem for the Apple/Franklin systems. It includes a communications package (Smartcom II), modem board, cables and complete documentation. A superior product.

Micromodem IIe.....\$259.88

Smartmodems

300 baud.....\$229.88
300/1200 baud.....\$539.88

NOVATION

AppleCat II

The AppleCat II is a 300 baud originate/answer, auto dial/answer, full/half duplex internal modem for the Apple/Franklin systems. A 1200 baud version is also available.

AppleCat II
300 baud.....\$319.88
1200 baud.....\$609.88

MICROSOFT

Softcard System

Microsoft's Softcard System includes Z80 Softcard for CP/M, Videx's Videoterm for 80 column display, a 16K RAMcard, software & Thom Hogan's book on CP/M. Premium Package.....\$474.88

If you've already got 64K RAM (Franklin or IIe), get the Z80/Softcard Combo. Same spec's, but without 16K RAMcard.
Z80/Videx Combo.....\$444.88

Z80 Softcard.....\$249.88
16K RAMcard.....\$69.88

SATURN/TITAN

Accelerator II

The Accelerator II's high-speed 6502 processor & 64K memory makes an Apple II run 3 1/2 times faster. Comes with pre-boot.
Accelerator II.....\$479.88

RAMboards by Saturn

32K Memory Board.....\$169.88
64K Memory Board.....\$269.88
128K Memory Board.....\$379.88

VIDEX

VideoTerm

The VideoTerm produces an 80-column display. Soft switch lets you toggle between 40 or 80 columns. Upper/lower case, CP/M & Pascal compatible.
VideoTerm w/switch.....\$229.88
VideoTerm w/o switch.....\$209.88

UltraTerm

UltraTerm takes VideoTerm one step further: it produces 160 columns, as well as 80 columns, with upper/lower case. It's great for spreadsheets & word processing. New enhancements (like a dim control) make it an exceptional package.
UltraTerm.....\$289.88

Enhancer II

Apple keyboard enhancer: type-ahead buffer, repeat, shift/cap lock, programmable keys, full ASCII (upper/lower case).
Enhancer II.....\$109.88

RANA SYSTEMS

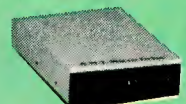
Elite-1

The Elite-1's are single-sided, with 163K storage, 84ms access time & 13 or 16 sectoring. The Controller Card can run four drives—Apples, Rana's or whatever—in any combination. The Elite-2's are double-sided drives, Elite-3's are 80 track drives.

Elite-1.....\$289.88
Elite-2.....\$474.88
Elite-3.....\$614.88
Controller.....\$104.88

ADVANCED MICRO PRODUCTS

Micro Drive



An Apple-compatible floppy disk drive that features a Panasonic direct-drive mechanism. There are 16 sectors per track (48 tpi), with a total capacity of 140K bytes (half-tracking capability too). An impressive and compact package.
AMT MicroDrive.....\$199.88

Information/Orders:

(603) 881-9855

Prices/Orders Only:

(800) 343-0726

No Hidden Charges:

- You get FREE shipping on all orders within the 48 states.
 - Most orders delivered within 10 days or less. UPS 2nd Day and Overnight available for most areas.
 - Easy payment terms. We accept all major credit cards, certified checks, money orders, company checks or personal checks (allow 21 days for personal checks).
 - We never charge extra for credit cards.
 - Credit cards are not charged until order is shipped.
 - We accept CODs up to \$1000 (add \$10 handling fee per order payable with certified check or money order).
 - We have a \$50 minimum order.
- Company Purchase Orders are accepted on a limited basis upon approval only. Sorry, no APO or foreign orders accepted.

All our equipment is shipped with full manufacturer's warranty. We are an **authorized dealer** for all products we sell to insure full warranty support, & we're authorized for warranty work on a number of printers. We also offer extended warranty plans for many printers.

We prepared this ad in November, & prices do change, so call to verify them.

Our **Computer Showroom** is now open in Amherst, New Hampshire, five miles west of Nashua (one hour from Boston).

Send \$1.00 and computer type for our new computer catalog.

HIGH TECHNOLOGY AT AFFORDABLE PRICES
THE BOTTOM LINE

MILFORD, NH 03055-0423 □ TELEPHONE (603) 881-9855

The Applesoft Adviser

by Dan Bishop

Hi-Res Page 2 Text

In this month's column, I will explain how you can use the mixed mode (graphics plus text mode) with page 2 of the Apple's hi-res graphics display. This information will be useful to you only if you can use hi-res page 2 (a minimum of 24K RAM) and have a need to use the mixed mode with hi-res page 2. Hi-res page 1 is far simpler to use with the mixed mode.

You might wish to use page 2 when your Basic program is so long that it spills into hi-res page 1 memory, rendering this area of memory unusable as a screen graphics display buffer. You also may wish to use page 2 when you need both page 1 and page 2 of hi-res graphics in order to accomplish your purposes, and both pages are in mixed mode.

The sample program provided with this article first appeared in an article I wrote for *Microcomputing* (July 1981, page 113) which also illustrates the techniques presented in this column.

Mixed Mode

By "mixed mode," I refer to the case in which a display's top 20 rows are used for graphics, while the bottom four rows are available for text display. Since the Apple does not easily lend itself to the mixing of text and graphics over the whole screen, many occasions arise when the use of mixed mode is essential.

The Basic commands GR and HGR both assume you want to use the mixed mode display (for lo-res or hi-res graphics respectively). Using either of these commands results in a mixed mode display using the page 1 buffers in memory. However, if you use the command HGR2, the resulting screen display uses all 24 rows for

System Buffers	0 - 1023	0000 - 03FF
Text page 1 & lo-res page 1	1024 - 2047	0400 - 07FF
Text page 2 & start of user Basic program storage.	2048 - 3071	0800 - BFFF
User Basic program storage (continued).	3072 - 8191	0C00 - 1FFF
Hi-res page 1 & user Basic program storage (continued).	8192 - 16383	2000 - 3FFF
Hi-res page 2 & user Basic program storage (continued).	16384 - 24575	4000 - 5FFF
User Basic program storage (continued).	24576 - 49151	6000 - BFFF
I/O and ROM	49152 - 65535	C000 - FFFF

Figure. Apple memory map showing locations of text page 1, lo-res page 1, text page 2, hi-res page 1 and hi-res page 2 memory buffers. Note that text page 2 also is used for storing the first lines of every Basic program.

graphics—leaving no room for on-screen text.

To understand why this is so, study the abbreviated Apple memory map shown in the Figure. Note that the memory buffer reserved for lo-res page 1 corresponds to the same area of memory reserved for the text page 1 display buffer. This means that when you list a program, the program information displayed on the screen is also stored in the text page 1 buffer area, character by character. It also means that if you are using lo-res page 1 in mixed

mode, the top five-sixths of this buffer area contains graphics information, and the bottom sixth contains any text to be displayed along the bottom four rows of the screen.

When you use hi-res page 1, you must reserve a much larger area of RAM for the buffer because more information must be stored for the hi-res screen. The Figure shows that

Address correspondence to Dan Bishop, c/o Custom Comp, PO Box 429, Buena Vista, CO 81211.

System Saver[®] didn't become the Apple's number one selling* peripheral by being just a fan.

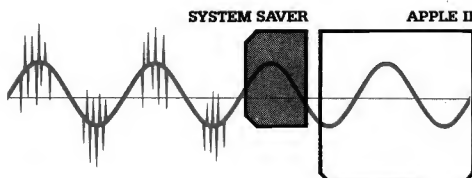
What made over 100,000 Apple[®] owners fall in love with System Saver? The answer is simple. It's the most versatile, most convenient, most useful peripheral ever made for the Apple.

System Saver filters out damaging AC line noise and power surges.

70-90% of all microcomputer malfunctions can be traced to power line problems.** Problems your System Saver guards against.

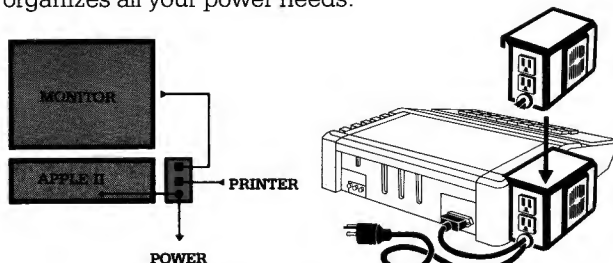
Power line noise can often be interpreted as data. This confuses your computer and produces system errors. Power surges and spikes can cause severe damage to your Apple's delicate circuitry and lead to costly servicing.

System Saver clips surges and spikes at a 130 Volts RMS/175 Volts dc level. A PI type filter attenuates common and transverse mode noise by a minimum of 30 dB from 600 kHz to 20 mHz with a maximum attenuation of 50 dB. You end up with an Apple that's more accurate, more efficient and more reliable.



System Saver makes your Apple more convenient to use.

No more reaching around to the back of your Apple to turn it on. No more fumbling for outlets and cords to plug in your monitor and printer. System Saver organizes all your power needs.

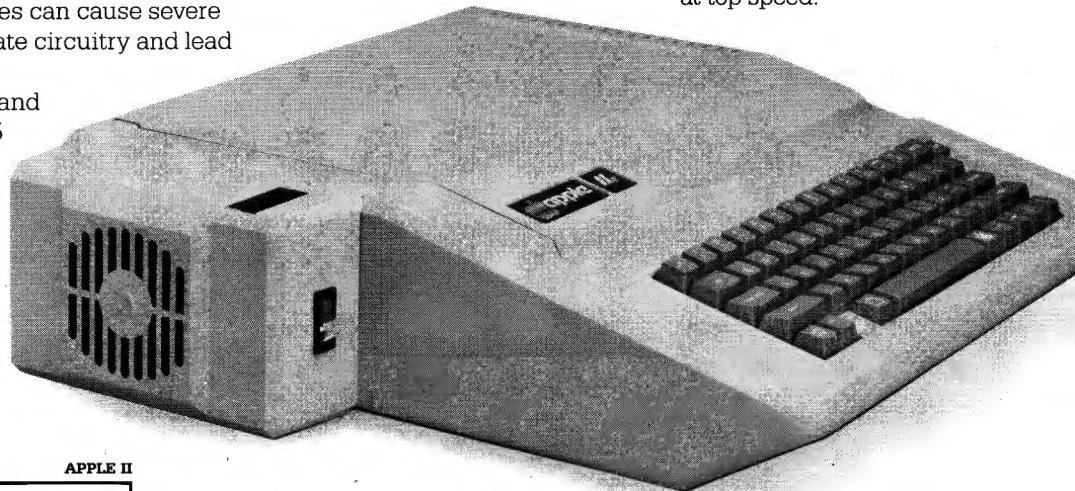
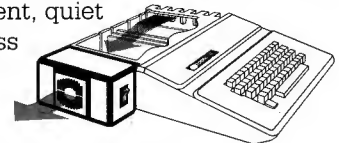


It functions as a multi-outlet power strip with two switched outlets. Plus System Saver offers the ultimate convenience; a front mounted power switch for fingertip control of your entire system.

System Saver lets your Apple keep its cool.

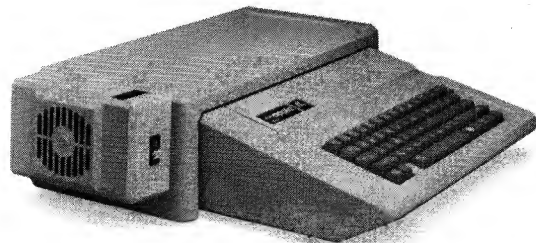
Today's advanced peripheral cards generate heat. In addition, the cards block any natural air flow through the Apple IIe creating high temperature conditions that shorten the life of the Apple and peripheral cards.

System Saver's efficient, quiet fan draws fresh air across the mother board, over the power supply and out the side ventilation slots. It leaves your Apple cool, calm and running at top speed.



So if you want to keep damaging heat, line noise and power surges out of your system for good, pick up the only peripheral that's in use every second your computer is in use. The System Saver. You'll soon come to think of it as the piece Apple forgot.

Compatible with Apple stand



\$89.95 at Apple dealers everywhere.



251 Park Avenue South, New York, NY 10010
(212) 486-7707 Telex: 236200 KEN UR

Circle 86 on Reader Service card.

*Softset Computer Products Hot List. **PC Magazine: March 1983.

System Saver is UL Listed. System Saver's surge suppression circuitry conforms to IEEE specification 507 1980, Category A. Available in 220/240 Volts, 50/60 Hz.

System Saver is a registered trademark of Kensington Microware Ltd.
© 1983 Kensington Microware Ltd. System Saver is patent pending.

IT'S A PLOT!

CALCU-PLOT™ is an equation solver, a data plotter, an important new mathematical tool.

CALCU-PLOT™ is a package of powerful mathematical utilities. The program solves equations exactly, and plots your graph on the screen.

CALCU-PLOT™ can plot empirical data, an equation, its integral or its derivative.

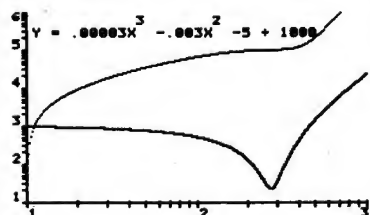
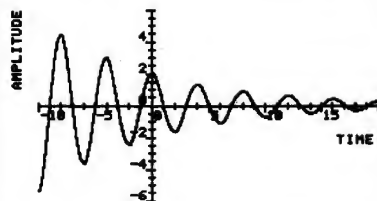
Use **CALCU-PLOT** as a problem solver in business, finance, engineering or science.

Use **CALCU-PLOT** as a teaching aid in trigonometry, calculus, engineering, or statistics. Just enter the equation, choose the coordinates, set the coordinate limits, enter constants and graph titles.

CALCU-PLOT™ is the professional equation solver from Human Systems Dynamics, publishers of The Statistics Series. Like the other programs in The Series, **CALCU-PLOT** easily performs sophisticated work for professionals at an affordable price.

\$150.00

Apple II or IIe, 48K, 1 or 2 Disk Drives, 3.3 DOS, ROM Applesoft.



HUMAN SYSTEMS DYNAMICS

To Order — Call (213) 993-8536
or Write

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324



Dealer Inquiries Invited



Mixed Mode Text Line	Decimal Location	Hex Location	Insertion Location
Line one	2640 - 2679	0A50 - 0A77	0A4A
Line two	2768 - 2807	0AD0 - 0AF7	0ACA
Line three	2896 - 2935	0B50 - 0B77	0B4A
Line four	3024 - 3063	0BD0 - 0BF7	0BCA

Table. Areas of RAM used as buffer zones for the four lines of text displayed when hi-res page 2 graphics are being used in mixed mode. The decimal ranges shown provide the allowable values for FY. The maximums for each range give the value for FM when the sub-routines presented in this article are used.

```

90 J=LEN(AZ$)
92 IF FY<2680 THEN JJ=2680-FY: GOTO 100
94 IF FY<2808 THEN JJ=2808-FY: GOTO 100
96 IF FY<2936 THEN JJ=2936-FY: GOTO 100
98 JJ=3064-FY
100 IF J>JJ THEN J=JJ
102 FOR I=1 TO J
104 FX=0
106 Z#=MID$(AZ$,I,1)
108 IF ASC(Z#)<64 THEN FX=64
110 POKE FY, ASC(Z#)+FZ+FX
112 FY=FY+1
114 NEXT I
116 RETURN

```

Listing 1. This subroutine is used to poke the characters contained in AZ\$ into the text page 2 buffer zones for mixed mode display.

this area of RAM begins at memory address 8192 and extends all the way up to 16383. But the bottom four lines of the display, if you are using mixed mode, still come from text page 1, the same buffer area used by lo-res page 1 graphics. Since this area is not used for any other purpose, there is no conflict.

Now note where the text page 2 buffer appears on the memory map. The text page 2 buffer occupies the identical region of RAM that your first batch of Basic program lines uses. Hi-res page 2 uses RAM locations 16384 through 24575. If hi-res page 2 were to be displayed in mixed mode, it would use five-sixths of this RAM space to provide a buffer for the top 20 lines of the display, and would use a part of text page 2 to store the four lines of text.

But wait a minute! Since your Basic program also uses the text page 2 buffer, any attempt to store information into this buffer for screen display will clobber the Basic instructions stored there! It would appear that hi-res page 2 must forever be used as a full-screen graphics display. Mixed mode must be out of

the question.

At least these were the conclusions I had until I ran across a cryptic remark on page 88 of my Applesoft manual. This page pointed out that by using a POKE -16301,0 command just after an HGR2 command, you could convert full screen graphics for hi-res page 2 into mixed mode. However, the manual goes on to state that "...the four lines of text are taken from page 2 of text, which is not easily accessible to the user." The manual did not say that the job couldn't be done—merely that it would present somewhat of a challenge!

The Challenge

The solution, though simple to comprehend, is difficult to implement. If some part of RAM used by the Basic program must also be used by the screen text buffer, those specific bytes need to be reserved for the text buffer so that their presence in the program itself will be ignored. One way to do this is to isolate those specific bytes within the quotation marks of a PRINT statement. So long as the program skips over these

PRINT statements, they will not cause any problems.

The Table lists the memory locations used by each of the four text lines within hi-res page 2. Of course, each zone is 40 bytes long. If you could design your Basic program so that each 40-byte zone would correspond to 40 blanks in a PRINT statement, the Basic interpreter would simply bypass these PRINT statements without regard to their contents. Then, when you wished to display information on the bottom four lines of a hi-res page 2 display, you could POKE the appropriate information into these reserved zones and it would be ready for display with a simple HGR2: POKE -16301,0 command to switch the display to mixed mode.

Sounds simple, doesn't it? You may have felt a little uneasy when reviewing the Table and finding the

memory addresses shown in hexadecimal as well as in decimal. If so, hang on tightly! Those hex addresses are very important. To tailor your Basic program to accommodate the four PRINT lines, you must use the program monitor and deal with hexadecimal. But before worrying about that, first enter the first 1200 bytes (more or less) of your Basic program exactly as you want them to appear in the final copy. Any changes in this segment of your program after fitting in the PRINT statements may result in disaster!

With the first 1200 bytes or so entered into the Apple's memory, execute a CALL -151 to enter the system monitor program. Using the monitor program, you must find the Basic program line number for the program line that runs through memory location hex -0A4A, which is six bytes before hex -0A50 (refer to

the Table). Your first PRINT zone instruction line must be placed directly before this program line, and it must provide enough blanks to push this program line past hex -0A78 (refer again to the Table). The following five steps may be used to accomplish this task.

1. Enter CALL -151 and then enter 0A00 as the starting memory address to be scanned. Carefully scroll through the resulting memory dump by repeatedly pressing the return key. Look for a hex -00 byte which tells you where a Basic program line has ended. When you find a hex -00, look at the next two bytes, which give the location of the program line that follows that one you are about to read. (Since address pairs are stored in memory in reverse order, address 0A4A will appear as 4A 0A.) If these two bytes are less than

Circle 247 on Reader Service card.

Put a Tutor in Your Apple Computer...



and sink your teeth into quality educational software from one of America's leading sources...Dorsett Educational Systems. We have over 1000 tutorial programs available! All feature full-time audio narration, easy to read upper- and lower-case characters, and visuals that clearly illustrate key concepts. These programs are designed to let students learn at their own pace, whether they are kindergarten level or college graduates; slow or exceptionally fast learners. And, anyway you slice it, the price for our software is ripe. Why not bite into our Apple tutorial programming today?

Only \$4.40 per program (\$8.80 for 2, one on each side of a half-hour cassette). \$59.90 for 16 programs (8 cassettes) in an album. Apple II requires a T/T Plug-in board, \$99.00, and T/T Stereo Cassette Player, \$79.90.

Send for a catalog of over 1000 programs for Apple, Atari, TRS-80, etc.

For more information, write or call:

TOLL FREE 1-800-654-3871

Dealer inquiries welcome.



DORSETT

Educational Systems, Inc.

Box 1226, Norman, OK 73070

Apple is a registered trademark of Apple Computers

THE STATISTICS SERIES

**FLEXIBLE • ACCURATE
EASY-TO-USE**

Human Systems Dynamics programs are used by leading universities and medical centers. Any program that doesn't suit your needs can be returned within 10 days for full refund. Designed for use with Apple II 48K, 1 or 2 Disk Drives, 3.3 DOS, ROM Applesoft.

NEW**REGRESS II**

\$150

Complete Multiple Regression Series
Stepwise, Simultaneous Solutions
Forward, Backward Solutions
Auto Power Polynomial Solutions
Data Smoothing, Transformations
Correlation and Covariance Matrices
Residuals Analysis, Partial Correlation
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Curve Fit. Hi-Res X-Y Plot

STATS PLUS

\$200

Complete General Statistics Package
Research Data Base Management
Count, Search, Sort, Review/Edit
Add, Delete, Merge Files
Compute Data Fields, Create Subfiles
Produce Hi-Res Bargraphs, Plots
1-5 Way Crosstabulation
Descriptive Statistics for All Fields
Chi-Square, Fisher Exact, Signed Ranks
Mann-Whitney, Kruskal-Wallis, Rank Sum
Friedman Anova by Ranks
10 Data Transformations
Frequency Distribution
Correlation Matrix, 2 Way Anova
r, Rho, Tau, Partial Correlation
3 Variable Regression, 3 t-Tests

ANOVA II

\$150

Complete Analysis of Variance Package
Analysis of Covariance, Randomized Designs
Repeated Measures, Split Plot Designs
1 to 5 Factors, 2 to 36 Levels Per Factor
Equal N or Unequal N, Anova Table
Descriptive Statistics, Marginal Means
Cell Sums of Squares, Data File Creation
Data Review/Edit, Data Transformations
File Combinations, All Interactions Tested
High Resolution Mean Plots, Bargraphs

**HUMAN SYSTEMS DYNAMICS**

To Order — Call (213) 993-8536
or Write

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222
Northridge, CA 91324

Dealer Inquiries Invited



0A4A, then proceed to the next hex -00 to appear in the memory dump. As soon as you find a "next-line" pointer that points beyond 0A4A, you have found the Basic program line that must be pushed back to make room for your first reserved PRINT zone. Analyze the next pair of bytes and convert them to a decimal number (remember to reverse their order). This will correspond to a Basic sequence line number in your program.

2. Determine how many bytes you must reserve to get from this point in RAM to the end of the first line's reserved space, 0A78. Be sure to count in hex! This value will correspond to the number of blank spaces to reserve between the quotation marks in the PRINT statement.

3. Return to Basic command mode by pressing the reset key, and insert your PRINT line along with the appropriate number of blanks (within quotation marks) immediately ahead of the program line identified in step 1.

4. Return to the monitor mode and scan from 0A50 to 0A78 to verify that all 40 bytes are filled with 20s, the ASCII code for the space character (hex -20 equals decimal -32).

5. Follow the exact procedure for the remaining three reserved zones. For the second line, you must look for a "next-line" pointer that exceeds 0ACA; for the third, 0B4A; and for the fourth, 0BCA. Use the Table to arrive at your byte count and to verify that the appropriate spaces have been set aside as blanks.

In your Basic program, you now have four new PRINT statements that

reserve one line each in text page 2 to be used with hi-res page 2 in mixed mode. When you use these reserved areas, you will be poking characters into them that will correspond to the characters you wish to have displayed on the screen. The only remaining task is to return all bytes in these zones to blanks before the program ends. If this is not done, you will see some very strange coding should you end the program and then list or save it. The following sequence of code should appear just before the END statement in your program:

```
FOR I=0 TO 39
  POKE 2640 + I, 32
  POKE 2768 + I, 32
  POKE 2896 + I, 32
  POKE 3024 + I, 32
NEXT I
```

This loop will replace with blanks any characters poked into the reserved zones, thereby restoring the program to its original condition.

For Example...

Suppose you have written the first 1200 bytes of your Basic program. You then enter CALL -151 and are in the monitor mode looking for 00 in the memory dump. Suppose you find a 00 at memory location 0A1F. The next two bytes are 3A 0A. Reverse the order of these two bytes to obtain 0A3A. Since this is not larger than 0A4A, you must proceed through the dump to the next 00 byte (which, of course, appears at 0A39). From that point, the next two bytes are 4D 0A, which becomes 0A4D when reversed. This value is larger than 0A4A, so this line of code corresponds to the program line that must be pushed back to make room

Listing 2. A flower garden. This program demonstrates the techniques presented in this article. Lines 1 through 116 must be reproduced exactly as shown, including remarks and blanks. To get the program to work properly, you may have to add or remove a few blanks from the PRINT statement in line 16.

```
1 REM FLOWER GARDEN
2 REM DEMONSTRATION
3 REM OF HIRES-PAGE2
4 REM GRAPHICS IN
5 REM MIXED MODE
```

Listing continued.

for the PRINT statement reserving the first zone.

The next two bytes contain C2 01. Reversing the order gives 01C2. Converting this number to decimal gives us the number 450 (1×256 plus 12×16 plus 2). This identifies the line which will be pushed back by the insertion of the PRINT statement as line 449.

Before leaving the monitor mode, however, you must also determine how many blanks that PRINT statement needs to adequately cover the range from 0A39 to 0A78. Counting in hex from 39 to 78 reveals that 62 blanks will be more than enough to reserve the needed text buffer zone.

Finally, return to Basic and enter:

```
449 PRINT"
```

being sure to place 62 blanks between the quotation marks. You have reserved in text page 2 the first text buffer zone, which is available for any text you wish to enter on the first text row when using hi-res page 2 in mixed mode.

Poking Text

Listing 1 presents the subroutine used for poking the desired text information into the four text display zones reserved by your four new PRINT statements. The subroutine variable FZ lets you specify whether you wish text to appear in normal, flashing or inverse mode. If FZ = 0, the text will appear in flashing mode. If FZ = 128, it will be in normal mode, and if FZ = -64, it will be in inverse mode.

Set the value for FY *before* using this subroutine. FY specifies the location where poking is to begin, and FY must have a value that falls within the decimal ranges shown in the Table. The subroutine does not check to be sure that you, the programmer, have chosen a proper value for FY, so be careful. If you are not, you may end up clobbering your program.

Finally, you must assign the character string you want displayed to the string variable AZ\$. You need not worry about whether the string may be too long to fit in the zone specified. The subroutine checks this fac-

hard ware



The sky's the limit with Franklin hardware. Because as our product line continues to grow, so can your ACE 1000 personal computer.

We still feature exceptional Franklin standards. Like true upper and lowercase characters, typewriter-style keyboard, 12-key numeric pad, and VisiCalc® keys. There's also color graphics capabilities. And 64K of RAM. Above all, Franklin ACE™ computers are hardware and software compatible with Apple® II — the largest microcomputer peripherals and software market in the world.

Now Franklin's peripheral boards can expand the capabilities of the ACE 1000 even more. By providing serial and parallel interfaces and a full 80-column display. There's even a card that allows you to run CP/M programs as well. So, experience another realm of computing. With ACE computers and accessories.

Franklin ACE is a trademark of Franklin Computer Corp.

VisiCalc is a registered trademark of Visi Corp.

Apple is a registered trademark of Apple Computer Inc.



FRANKLIN
COMPUTER CORPORATION
Better than ever.

2128 Route 38 Cherry Hill, NJ 08002 Telephone: 609-482-5900 Telex: 837-385



Our Favorite Analogy:

The Computer Industry Is Like The Car Industry.



How?



1 In the beginning, many different companies made cars. Same with computers.

2 In the beginning, car owners were portrayed as just cruising along and no one was shown changing flat tires. Same with crashing computers.

3 Different cars run on different fuels. Different computers have different operating systems.

4 Only the strong car makers survived. It will be the same with computers.

Buy your software from the strong, dependable software house. Strictly Soft Ware will help you avoid the potholes of the computer world.

Strictly Soft Ware 1-614-587-2938

To receive your free catalog right away, send this coupon to the address below. Do you want our ☐ Apple or ☐ IBM Catalog?

NAME _____

STREET _____

CITY _____ STATE _____ ZIP _____

() _____
PHONE _____

Strictly Soft Ware
P.O. Box 338
Granville, OH 43023



IC

The Applesoft Adviser

Listing continued.

```

10 LOMEM:24600
12 REM BZ$ HAS TWENTY BLANK SPACES
14 BZ$=""
16 PRINT"                                     ":REM 31 BLANKS
18 GOTO 1000

20 ROT=0
22 SCALE=SC
24 FOR I=1 TO 4
26 DRAW 1 AT X,Y
28 ROT=15*I
30 NEXT I
32 RETURN

40 POKE 232, 04
42 POKE 233, 96
44 DATA 1,0,4,0,46,46,46
46 DATA 44,44,36,39
48 DATA 39,55,55,55,00

50 FOR I=1 TO 16
52 READ A
54 POKE 24579+I, A
56 NEXT I
58 RETURN

60 Y=INT(L/200)
62 X=L-(200*Y)+39
64 Y=Y+20
66 RETURN

70 HCOLOR=1
72 HPLOT 37,19 TO 239,19 TO 239,140 TO 37,140 TO 37,19
74 RETURN

80 FOR I=1 TO 5000:NEXT I:RETURN

90 J=LEN(AZ$)
91 PRINT"                                     ":REM 60 BLANK SPACES
92 IF FY<2680 THEN JJ=2680-FY:GOTO 100
94 IF FY<2808 THEN JJ=2808-FY:GOTO 100
95 PRINT"                                     ":REM 50 BLANKS
96 IF FY<2936 THEN JJ=2936-FY:GOTO 100
98 JJ=3064-FY

100 IF J>JJ THEN J=JJ
101 PRINT"                                     ":REM 50 BLANKS
102 FOR I=1 TO J
104 FX=0
106 Z$=MID$(AZ$,I,1)
107 PRINT"                                     ":REM 70 BLANKS
108 IF ASC(Z$)<64 THEN FX=64

110 POKE FY, ASC(Z$)+FZ+FX
112 FY=FY+1
114 NEXT I
116 RETURN

200 N$=""
202 GET AZ$
204 IF ASC(AZ$)=13 THEN RETURN
206 IF ASC(AZ$)=8 THEN GOTO 216
208 GOSUB 90

210 N$=N$+AZ$
212 IF FY<FM THEN GOTO 202
214 RETURN
216 AZ$="" :FY=FY-1
218 N$=LEFT$(N$,LEN(N$)-1)

```

Listing continued.

Soft ware

tor and will print only as many characters from AZ\$ as will fit on the screen.

A word of warning is needed here. It is generally good practice to save a program to disk before testing it. When the program is run, it will be modifying its own code, so it could be all too easy for a minor error to totally destroy the program. When working with these techniques, always save your program before running it! Precious hours could be saved.

A Demonstration Program

Listing 2 is a short program that demonstrates these techniques. This program, A Flower Garden, not only uses AZ\$ to display text strings onto the hi-res page 2 text window, but also variables and information entered at the keyboard.

Lines 90 through 116 from Listing 1 also appear in Listing 2, with four notable additions. Line 91 had to be inserted before line 92, because this location in RAM corresponded to the first PRINT zone buffer area. Similarly, lines 95, 101 and 107 have been added to provide for the other three PRINT zone buffers.

When entering this program, be sure to copy the listing *exactly*, particularly from line 1 through line 116. Any variation in this part of the program will offset the PRINT zone buffers and may have you poking text into part of your Basic program instructions!

Line 16 in this program contains a series of 31 blanks. When using the techniques described in this article, it is useful to include such a dummy print instruction at the outset of the program. Then, if it becomes necessary to add or change code in the Basic program at some point before the PRINT zone buffers, blanks in line 16 can be removed or added. This will keep your PRINT zone buffers located exactly where they are needed.

The main program begins at line 1000. The subroutine beginning at line 40 sets up a simple shape table used for drawing the flowers on the display. The subroutine at line 70 plots the fence around the garden,



There's just no end to the software available for Franklin ACE™ computers. Start with Franklin's own word processing and spreadsheet analysis programs. ACEWriter II and ACECalc. Sophisticated, yet easy to learn and use.

ACEWriter II was designed to take advantage of the type-writer-style keyboard of the Franklin ACE computers. And ACECalc, with a full 80-column display of variable column widths, lets you arrange data in a format that's manageable and easy to read, without squeezing or wasting space. ACECalc also allows you to create "invisible" fields. And to protect other fields from being accidentally changed.

And when you need more than word processing and spreadsheet analysis, you can choose from 16,000 more software programs, including accounting, payroll, inventory and purchasing. Even games. Because Franklin ACE computers are compatible with software written for the Apple® II.

Franklin ACE is a trademark of Franklin Computer Corp.

VisiCalc is a registered trademark of Visi Corp.

Apple is a registered trademark of Apple Computer Inc.

FRANKLIN
COMPUTER CORPORATION
Better than ever.

2128 Route 38 Cherry Hill, NJ 08002 Telephone: 609-482-5900 Telex: 837-385

Top 10 Best Sellers

COMPUTER SOFTWARE

Recreational

Zaxxon.....	27.90
Zork I.....	26.90
Frogger.....	24.00
Deadline.....	33.90
Witness.....	39.90
Chapflifer.....	23.90
Knight of Diamonds.....	23.95
Wizardry.....	33.90
Zork II.....	26.90
Castle Wolfenstein.....	19.90

Systems & Utilities

Double Take.....	25.75
Apple Mechanic.....	19.95
Pronto DOS.....	19.05
DOS Boss.....	16.25

Business

Bank Street Writer.....	46.90
PFS Files.....	84.90
Home Accountant.....	54.90
Visicalc.....	176.90
Dbase II.....	469.00
Sensible Speller.....	84.90
PFS Reports.....	84.90
Wordstar.....	329.00
Multi Plan.....	181.90
Personal Investor.....	95.90

Education

Master Type.....	27.00
Face Maker.....	26.00
Type Attack.....	27.00
Kindercomp.....	21.00
..The Most Amazing Thing.....	27.00
Story Machine.....	23.00
Algebra I.....	27.00
Compu-Read.....	21.00

WE CARRY A COMPLETE LINE OF SOFTWARE FOR APPLE ATARI,TRS-80,IBM,CP/M,8 CP/M51/4,COMMODORE

COMPUTER HARDWARE

ALS

280 CP/M22.....	140.00
280 CP/M30.....	
64k 6mhz 80col.....	308.00
Smarterm.....	142.00

Videx

Videoterm.....	202.00
w/softswitch.....	229.00
Enhancer II.....	109.00
w/function strip.....	154.00
Ultraterm.....	339.00

Novation

Apple Cal II.....	309.00
Apple Cal.....	609.00
Upgrade Kit.....	339.00

DC Hayes

Micromodem II.....	275.00
w/terminal program.....	314.
Smartmodem 300.....	325.00
Smartmodem 1200.....	532.00

Amdak

Color I.....	295.00
Color II.....	485.00
Color III.....	395.00
Color IV.....	995.00
300G.....	149.00
300A.....	158.00
DVM.....	125.00
Amdisk I.....	255.00

USI

13" Color Composite.....	295.00
9" Green PI-1.....	119.00
12" Green PI-2.....	145.00
12" Amber PI-3.....	155.00
9" Amber PI-4.....	145.00

Brothers

Daisy Writer 2000.....	1149.00
Tractor Feed.....	149.00

Accessories

System Saver.....	68.00
Joystick.....	45.00

Okidata

82A.....	408.00
83A.....	658.00
84P.....	995.00
84S.....	1100.00
92P.....	517.00
92S.....	585.00
93P.....	862.00
93S.....	954.00

C-Itoh

Prowriter 10.....	398.00
Prowriter 15.....	698.00
Prowriter S 15.....	770.00
Starwriter.....	
F 10 40cps.....	1275.00
F10 55cps.....	1575.00

Transtar

130P.....	715.00
130S.....	745.00
140S.....	1349.00
315(Color).....	495.00
PICS Apple for 315.....	85.00

Mannesmann Tally

MT 160L.....	749.00
MT 160S.....	1449.00
MT 1802.....	1695.00
MT 180S.....	1695.00

Microsoft

SoftCard.....	239.00
Premium System (softcard,Videoterm 80 col,CP/M USERS Guide.....	469.00
SoftCard Plus (same as above less RAM Card).....	489.00
Premium Softcard.....	359.00

Dysan

51/4 SS/SD.....	33.00
51/4 SS/DD.....	36.00
51/4 DS/DD.....	41.00

For immediate processing send certified check, money order, or use Mastercard or Visa (include card # and expiration date). California residents add 6.5% sales tax, UPS ground Free. UPS Air \$1.00/lb. (\$3.00 min.) Foreign Country 15% of order (\$15.00).

*Orders under \$100.00 will be subject to \$3.00 shipping and handling. Please call for current prices!

SOUTHERN CAL MICRO

in California 1-800-824-6732
outside Calif. 1-800-547-7861

3113 Pico Blvd. Santa Monica, Ca. 90405

Listing continued.

220 GOSUB 90
222 FY=FY-1
224 GOTO 202

300 FOR I=0 TO 39
302 POKE 2640+I, FZ
304 POKE 2768+I, FZ
306 POKE 2896+I, FZ
308 POKE 3024+I, FZ

310 NEXT I
312 RETURN

1000 GOSUB 40
1005 HGR2
1010 GOSUB 70
1015 HCOLOR=2
1020 POKE -16301,0
1025 AZ\$="WHAT IS YOUR NAME"
1030 FY=2650:FZ=128

1035 GOSUB 90
1040 AZ\$="?:FZ=0:GOSUB 90
1045 FY=2780:FM=2807
1050 FZ=-64:GOSUB 200
1055 AZ\$="I AM GLAD TO MEET YOU "+N\$
1060 FY=3024:FZ=0
1065 GOSUB 90:GOSUB 80
1070 AZ\$=BZ\$+BZ\$
1075 FY=2640:FZ=0
1080 GOSUB 90
1085 FY=3024:GOSUB 90:GOSUB 80
1090 FY=2768:FZ=128:GOSUB 90
1095 N=0

1100 AZ\$="THE GARDEN HAS 24000 LOCATIONS."
1105 FY=2640:FZ=-64:GOSUB 90
1110 N=N+1
1115 AZ\$="WHERE DO YOU WANT FLOWER #"+STR\$(N)+"?"
1120 FY=2768:FZ=128:GOSUB 90
1125 FY=2896:FZ=0:FM=2935
1130 GOSUB 200
1135 L=VAL(N\$)
1140 IF L<0 OR L>24000 THEN FZ=128:GOSUB300:GOTO1100
1145 AZ\$="WHAT SIZE FLOWER?"
1150 FY=3024:FZ=128:GOSUB 90
1155 FY=3042:FZ=0
1160 AZ\$="S.....L"
1165 GOSUB 90
1170 AZ\$="MALL/"
1175 FY=3043:FZ=128:GOSUB 90
1180 AZ\$="ARGE?"
1185 FY=3049:GOSUB90
1190 FZ=0: GOSUB 200

1195 SC\$ = LEFT\$(AZ\$,1):SC = 2
1200 IF SC\$ = "S" THEN SC = 1: GOTO 1210
1205 IF SC\$ < > "L" THEN GOTO 1145
1210 GOSUB 60: GOSUB 20
1215 GOSUB 1270
1220 AZ\$ = "DO YOU WANT TO PLANT ANOTHER??"
1225 FY = 2640:FZ = 128: GOSUB 90
1230 AZ\$ = "Y/N"
1235 FY = 2780:FZ = 0: GOSUB 90
1240 FZ = - 64:FM = 2679: GOSUB 200
1245 R\$ = LEFT\$(N\$,1)
1250 IF R\$ = "Y" THEN GOTO 1100
1255 IF R\$ < > "N" THEN GOTO 1220
1260 FZ = 32: GOSUB 300
1265 HOME : TEXT : END
1270 AZ\$ = RZ\$ + BZ\$
1275 FY = 2896:FZ = 0: GOSUB 90
1280 FY = 3024: GOSUB 90
1285 FY = 2760: GOSUB 90
1290 RETURN

As I mentioned earlier, the AppleSoft manual stated that page 2 of text was “not easily accessible to the user,” and it was that comment that prompted me to develop this technique to use text page 2. In the fourth paragraph of this article, I made a similar comment myself when I pointed out that the Apple “does not easily lend itself to the mixing of text and graphics over the whole screen.” In next month’s column, I hope to provide the solution to this challenging problem. ■

FRANKLIN dealers

FRANKLIN DEALERS

Alabama
WYS Systems Inc.
1000 10th Ave. S.E.
Birmingham, AL 35203
205/944-1100

Alaska
SofTech Systems
2000 E. 1st Ave.
Anchorage, AK 99501
907/561-1100

Arizona
Data Systems
1000 N. 1st St.
Phoenix, AZ 85004
602/254-1100

Arkansas
Bentley Systems
1000 N. 1st St.
Fayetteville, AR 72701
501/772-1100

California
San Francisco
1000 N. 1st St.
San Francisco, CA 94104
415/398-1100

Colorado
Colorado
1000 N. 1st St.
Denver, CO 80202
303/733-1100

Connecticut
Connecticut
1000 N. 1st St.
Hartford, CT 06103
203/254-1100

Delaware
Delaware
1000 N. 1st St.
Wilmington, DE 19801
302/739-1100

District of Columbia
District of Columbia
1000 N. 1st St.
Washington, DC 20001
202/462-1100

Florida
Florida
1000 N. 1st St.
Tampa, FL 33601
813/254-1100

Georgia
Georgia
1000 N. 1st St.
Atlanta, GA 30301
404/525-1100

Hawaii
Hawaii
1000 N. 1st St.
Honolulu, HI 96801
808/535-1100

Idaho
Idaho
1000 N. 1st St.
Boise, ID 83701
208/333-1100

Illinois
Illinois
1000 N. 1st St.
Chicago, IL 60601
312/541-1100

Indiana
Indiana
1000 N. 1st St.
Indianapolis, IN 46201
317/434-1100

Iowa
Iowa
1000 N. 1st St.
Des Moines, IA 50301
515/261-1100

Kansas
Kansas
1000 N. 1st St.
Topeka, KS 66601
913/466-1100

Kentucky
Kentucky
1000 N. 1st St.
Louisville, KY 40201
502/582-1100

Louisiana
Louisiana
1000 N. 1st St.
Baton Rouge, LA 70801
504/383-1100

Maine
Maine
1000 N. 1st St.
Portland, ME 04101
207/866-1100

Maryland
Maryland
1000 N. 1st St.
Baltimore, MD 21201
410/528-1100

Massachusetts
Massachusetts
1000 N. 1st St.
Boston, MA 02101
617/552-1100

Michigan
Michigan
1000 N. 1st St.
Ann Arbor, MI 48101
313/763-1100

Minnesota
Minnesota
1000 N. 1st St.
Minneapolis, MN 55401
612/338-1100

Mississippi
Mississippi
1000 N. 1st St.
Jackson, MS 39201
601/944-1100

Missouri
Missouri
1000 N. 1st St.
St. Louis, MO 63101
314/436-1100

Montana
Montana
1000 N. 1st St.
Billings, MT 59101
406/251-1100

Nebraska
Nebraska
1000 N. 1st St.
Lincoln, NE 68501
402/441-1100

Nevada
Nevada
1000 N. 1st St.
Las Vegas, NV 89101
702/398-1100

New Hampshire
New Hampshire
1000 N. 1st St.
Manchester, NH 03101
603/866-1100

New Jersey
New Jersey
1000 N. 1st St.
Newark, NJ 07101
908/527-1100

New Mexico
New Mexico
1000 N. 1st St.
Albuquerque, NM 87101
505/261-1100

New York
New York
1000 N. 1st St.
New York, NY 10001
212/512-1100

North Carolina
North Carolina
1000 N. 1st St.
Raleigh, NC 27601
919/833-1100

North Dakota
North Dakota
1000 N. 1st St.
Bismarck, ND 58501
701/251-1100

Oklahoma
Oklahoma
1000 N. 1st St.
Oklahoma City, OK 73101
405/251-1100

Oregon
Oregon
1000 N. 1st St.
Portland, OR 97201
503/251-1100

Pennsylvania
Pennsylvania
1000 N. 1st St.
Philadelphia, PA 19101
215/561-1100

Rhode Island
Rhode Island
1000 N. 1st St.
Providence, RI 02901
401/866-1100

South Carolina
South Carolina
1000 N. 1st St.
Columbia, SC 29201
803/251-1100

South Dakota
South Dakota
1000 N. 1st St.
Sioux Falls, SD 57101
605/333-1100

Tennessee
Tennessee
1000 N. 1st St.
Nashville, TN 37201
615/251-1100

Texas
Texas
1000 N. 1st St.
Dallas, TX 75201
214/525-1100

Utah
Utah
1000 N. 1st St.
Salt Lake City, UT 84101
801/525-1100

Vermont
Vermont
1000 N. 1st St.
Montpelier, VT 05601
802/251-1100

Virginia
Virginia
1000 N. 1st St.
Richmond, VA 23201
804/251-1100

Washington
Washington
1000 N. 1st St.
Seattle, WA 98101
206/462-1100


West Virginia
West Virginia
1000 N. 1st St.
Martinsburg, WV 26101
304/251-1100

Wisconsin
Wisconsin
1000 N. 1st St.
Milwaukee, WI 53201
414/525-1100

Wyoming
Wyoming
1000 N. 1st St.
Cheyenne, WY 82001
307/251-1100



FRANKLIN
COMPUTER CORPORATION
Better than ever

February 1984  Cider 25

Why?

Come on to my house," said a friend of mine. "Why?" I asked the question having become suspicious of human nature. "I want you to show me how to convert Apple II graphics to my Apple III." There was, after all, a catch. Life is, after all, plagued with ulterior motives. Luckily, I had all of the tools I needed already on my person. I agreed.

I sat down in front of the Apple III, turned everything on, and when all of the loading messages had finished, reached into my pocket. I withdrew five crayons and began to rapidly smear them on to the screen of the Monitor III.

"Hey! What are you doing?" was the question naturally raised. I had expected it. "I'm just doing what you asked. In hi-res mode the Apple II can do exactly what I'm doing now."

And I showed my friend Listing 1.

"Why," I asked, putting down my artistic implements, "would you want to do *that* to an Apple III?" The reply: "All of those great graphics programs on the II..." "Think of it this way, you can poke values onto the Apple II screen, which you can't do on the III, but look, hi-res page one (of two) starts at &H2000 (hexadecimal 2000). It goes down a few screen lines to &H2380 and then skips back to &H2028. All in all, it's a pretty confusing system. You should have seen the consternation it caused Apple II users when they first found out about it.

"And lo-res graphics aren't much better, it's just a bunch of boxes! Why do you want to do that to a III? Tell you what, let's go buy a 944 and we'll strip the engine out. Then we can put

a VW engine in there instead and bolt on all that great stuff they've got for VW's.

"Better still, why don't you just run the Apple II programs in emulation mode the way it was meant to be done? Or if you've got to see what they'd look like on an Apple III, contact the folks at the International Apple Core, 908 George St., Santa Clara, CA 95050. I haven't seen it, but they supposedly have a program called Apple-CON that converts Applesoft programs to Business Basic. Give them a call at 408-727-7652 and find out what, if anything, it can do for graphics.

"Think of it this way, though. On an Apple II, if you want to set a screen size, you do it according to the rules in Listing 2a. If you're doing that on an Apple III, all you need to use is the statement in Listing 2b. Why complicate your life?

"And for direct screen manipulation! Simplicity, thy name is Apple III! Take a minute and type in the program in Listing 3. You can move things around without having to re-

1. Hi-res is 280 X 192 dots
2. Each dot on the screen represents one bit from from the picture buffer.
3. Seven of the eight bits are displayed on the screen with the eighth bit used to select the colors of the dots in that byte.
4. If a bit is "off" its corresponding dot will be black.
5. If a bit is "on" and in the leftmost column of the screen or in any even numbered column, then it is violet.
6. If a bit is "on" and in the rightmost column of the screen or in any odd numbered column, then it is green.
7. If two dots are placed side by side, then they will both appear white.
8. If the undisplayed bit of a byte is turned "on" then the colors blue and red are substituted for violet and green respectively.
9. It is not possible to mix green and blue, green and red, violet and blue or violet and red in the same byte.

Listing 1. The rules for Apple II hi-res graphics.

1. Black
2. Violet
3. Blue
4. Black
5. Green
6. Red

Table 1. The "six" colors available in Apple II hi-res mode.

You can write to Bill O'Brien at WABASA Consulting & Management, 111 Brook St., Scarsdale, NY 10583.

A CASE THAT'S AS ADVANCED AS YOUR APPLE!



Customized foam interior is die cut to fit and protect your Apple. The lid is padded with convoluted urethane foam for complete protection.

The strong stainless steel tongue and groove frame, designed for moisture and dust resistance, is the only one of its kind.

Comfortable padded handle makes carrying easy. Reinforced wheels are provided for easy transport. Convenient T-bar pull handle flips up when you need it, folds down for travel.

Secure three-point latching is provided by lock and key, combined with an easy to use combination lock. Our Sureglide™ cam action swivel closures hold even when the case is dropped.

A sturdy wall of high impact resistant ABS (used in football helmets and auto bumpers) provides durable outer protection as well as good looks. The inconspicuous exterior of the case camouflages your computer for added security.



American Tourister computer cases offer you a way to carry, protect and camouflage your Apple in style. They're built with the same high quality and features that have made American Tourister luggage famous for more than 50 years.

Quality control atmospheric, stress and "abuse" tests maintain the strict American Tourister quality standard. And in the event of loss, damage or theft, the unique American Tourister lifetime case registration program will verify the date of purchase for insurance claims. Available in metallic graphite gray and classic black.

**FULL ONE YEAR LIMITED WARRANTY
30 DAY MONEY-BACK GUARANTEE!**

USE YOUR VISA, MASTERCARD OR AMERICAN EXPRESS



TO ORDER, CALL TOLL FREE

1-800-341-6311

IN RHODE ISLAND, CALL 401 273-2020.

MODEL	COMPUTER	PRICE
0901 D	IBM PC & XT	\$149.95
0902 D	APPLE II, II+, IIe	\$149.95
0903 D	COMMODORE VIC 20 & 64	\$129.95
0904 D	TI 99/4A	\$129.95
0905 D	ATARI 400 & 800	\$139.95
0906 D	TRS-80 MODEL 100	\$119.95
0907 D	EPSON HX-20	\$119.95
0908 D	EPSON FX-80 PRINTER	\$119.95

\$50

STUDENT STATISTICS

Are you tired of doing statistics problems on a calculator?

Use **HSD STATS™** on an Apple II/Ile and make your life easier. You can read the manual first or just boot the program disk and make your choices from the screen menu.

DATA FILES

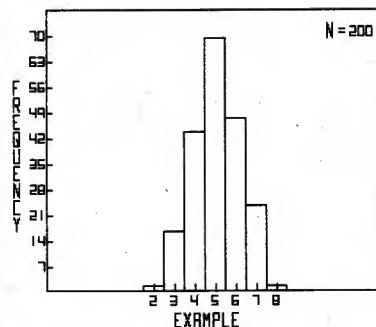
Save your data to disk files for later use, join data files, and transform data.

ANALYSES

Get means and standard deviations, z-scores, frequency distributions with bargraphs, chi-squares, Pearson correlations, linear regressions, scatterplots, and 3 t-tests.

OUTPUT

Obtain test results with p-values on monitor or printer.



Researchers at leading universities and medical centers have used **HSD STATS™** for years. They paid \$99.95, but now you can get the complete program package for only \$50.

Save time and aggravation. Use **HSD STATS™** from Human Systems Dynamics, publishers of The Statistics Series,™ sophisticated statistics programs for professionals.

HSD STATS™ comes with a 10 day money back guarantee.

Apple II, 48K, 1 or 2 Drives, ROM Applesoft.



HUMAN SYSTEMS DYNAMICS

To Order — Call (818) 886-4281
or Write

HUMAN SYSTEMS DYNAMICS
9010 Reseda Blvd. Suite 222/Dept. C
Northridge, CA 91324



Dealer Inquiries Invited



Listing 3. Apple II screen manipulation.

```

10 /
*****
*
*   THE PROGRAM   *
*
*****

15 GOSUB 30000
20 E$=FULL.SCREEN$+CLEAR.SCREEN$
25 PRINT FULL.SCREEN$;CLEAR.SCREEN$;
30 PRINT CURSOR.OFF$;
35 PRINT INVERSE.ON$;
40 PRINT CLEAR.SCREEN$;
45 PRINT INVERSE.OFF$;
50 COL=1:ROW=1:GOSUB 30115:PRINT UPPER.LEFT$;
55 COL=77:ROW=21:GOSUB 30115:PRINT LOWER.RIGHT$;
60 PRINT CLEAR.SCREEN$;
65 GOSUB 30200
70 PRINT CURSOR.OFF$;
75 :
80 :
100 /

*****
*
*   CHAIN NEXT PROGRAM   *
*
*****

105 GOTO 105
30000 /

*****
*
*   DEFINITIONS   *
*
*****

30005 CLEAR.SCREEN$=CHR$(28)
30010 CLEAR.END.LINE$=CHR$(31)
30015 HOME.CURSOR$=CHR$(12)
30020 CLEAR.END.SCREEN$=CHR$(29)
30025 INVERSE.ON$=CHR$(18)
30030 INVERSE.OFF$=CHR$(17)
30035 CURSOR.LEFT$=CHR$(8)
30040 CURSOR.RIGHT$=CHR$(9)
30045 CURSOR.UP$=CHR$(11)
30050 CURSOR.DOWN$=CHR$(10)
30055 SCREEN.ON$=CHR$(15)
30060 SCREEN.OFF$=CHR$(14)
30065 CLEAR.LINE$=CHR$(30)
30070 BELL$=CHR$(7)
30075 UPPER.LEFT$=CHR$(2)
30080 LOWER.RIGHT$=CHR$(3)
30085 FULL.SCREEN$=CHR$(4)
30090 CURSOR.ON$=CHR$(5)
30095 CURSOR.OFF$=CHR$(6)
30099 RETURN
30100 /

*****
*
*   PROCEDURES   *
*
*****

30105 PRINT CHR$(19);CHR$(COLOR);:
      RETURN:
      ' SET FOREGROUND COLOR
30110 PRINT CHR$(20);CHR$(COLOR);:
      RETURN:
      ' SET BACKGROUND COLOR
30115 PRINT CHR$(26);CHR$(COL);CHR$(ROW);:
      RETURN:
      ' CURSOR POSITIONING
30120 PRINT CHR$(16);CHR$(MODE);:
      RETURN:
      ' TEXT MODE (0=40X24 B&W, 1=40X24 COLOR, 2=80X24 B&W)
30125 PRINT CHR$(23);CHR$(SHIFT);:
      RETURN:
      ' HORIZONTAL SHIFT (1=1 RIGHT, 255=1 LEFT)

30200 /

*****
*
*   LOGO   *
*
*****

30205 LOGO$(1)="
30210 LOGO$(2)="
30215 LOGO$(3)="
30220 LOGO$(4)="
30225 LOGO$(5)="
30230 LOGO$(6)="
30235 LOGO$(7)="
30240 :
30245 FOR X=1 TO 7
30250 IF X=1 THEN GOSUB 30400:
      ELSE IF X=4 THEN GOSUB 30440:
      ELSE IF X=5 THEN GOSUB 30455
30255 FOR Y=1 TO LEN(LOGO$(X))
30260 IF MID$(LOGO$(X),Y,1)="#" THEN PRINT INVERSE.ON$;" ";INVERSE.OFF$;:
      ELSE PRINT " ";

```

Listing continued.

paint the screen, without having to go through complicated processes. And it's all done in Basic, not machine language."

"If you PRINT CHR\$(23);CHR\$(1);, the entire video display will shift to the right one row. PRINT CHR\$(23);CHR\$(255) will do the same, only the shift is left. It is not an erase and repaint of the display, but a genuine shift that is almost flicker-free. Up and down motion is simply a matter of placing the cursor on the top or bottom lines of the display and printing the up or down arrow characters (CHR\$(11) and CHR\$(10), respectively). By using the WINDOW command to partition the display areas, near animation can be achieved."

"Gee," was about the only answer. It was more than I expected, actually. The rest of the evening passed

without reportable incident.

What's Happening

As of this date, with its usual and unavoidable publication delays, nothing special has been released by Apple vis a vis a new version of the Apple III. Rumors abound, but as usual, they are unconfirmed (such being the nature of rumors). If anything, Apple seems to be putting a new emphasis on the III. Just released is a small booklet called *Will Someone Please Tell Me What an Apple III Can Do*. It's a 95-page listing of Apple III software available both in the United States and Great Britain. While some of the programs listed need the SoftCard III (Wordstar III and dBase II to name two prominent examples), the majority are SOS compatible. Get a copy, this

Listing continued.

```

30265 NEXT Y
30270 PRINT
30275 NEXT X
30300 '
*****
*                               *
*   MOVE THE SCREEN           *
*                               *
*****

30305 GOSUB 30400
30310 FOR X=1 TO 8:PRINT CURSOR.UP*;;NEXT X
30315 FOR X=1 TO 10:SHIFT=1:GOSUB 30125:NEXT
30320 GOSUB 30455
30325 FOR X=1 TO 17:SHIFT=1:GOSUB 30125:NEXT
30330 COL=1:ROW=21:GOSUB 30115
30335 FOR X=1 TO 5:PRINT CURSOR.DOWN*;;NEXT
30340 PRINT FULL.SCREEN*;;
30345 COL=1:ROW=12:GOSUB 30115
30350 PRINT UPPER.LEFT*;;
30355 COL=76:ROW=10:GOSUB 30115
30360 PRINT LOWER.RIGHT*;;
30365 FOR X=1 TO 7:SHIFT=255:GOSUB 30125:NEXT
30370 '
30375 PRINT FULL.SCREEN*;;
30380 COL=18:ROW=16:GOSUB 30115
30385 PRINT "Productivity and Economy Working Together";
30390 '
30395 RETURN
30400 '
*****
*                               *
*   DIVIDE SCREEN             *
*                               *
*****

30405 PRINT FULL.SCREEN*;;
30410 COL=1:ROW=1:GOSUB 30115
30415 PRINT UPPER.LEFT*;;
30420 COL=77:ROW=10:GOSUB 30115
30425 PRINT LOWER.RIGHT*;;
30430 COL=0:ROW=0:GOSUB 30115
30435 RETURN
30440 PRINT FULL.SCREEN*;;
30445 COL=18:ROW=12:GOSUB 30115
30450 RETURN
30455 PRINT FULL.SCREEN*;;
30460 COL=1:ROW=13:GOSUB 30115
30465 PRINT UPPER.LEFT*;;
30470 COL=76:ROW=8:GOSUB 30115
30475 PRINT LOWER.RIGHT*;;
30480 COL=0:ROW=6:GOSUB 30115
30485 RETURN

```



Only Titan's Neptune™ provides Apple IIe users with an 80-column video display and up to 192K memory—all in just one slot.

Now, Titan's exclusive Neptune extended 80-column card gives you increased video display and up to 192K memory using just one slot in your Apple IIe. Designed expressly for the auxiliary slot of the IIe, the Neptune is available with 64K, 128K or 192K of RAM memory. The RAM memory can be



utilized as a solid state RAM disk. Additionally, Titan's VC-EXPAND/80™ software supplied with each Neptune expands VisiCalc® up to 220K of workspace memory and provides many other VisiCalc enhancements. DOS, PASCAL and CP/M® PSEUDO-DISK™ patches and a DOS relocation program are also included with each Neptune card.

Let us help you expand your Apple's productivity. For information on the Neptune and other Titan microcomputer products, see your computer dealer or contact: Titan Technologies, Inc., P.O. Box 8050, Ann Arbor, MI 48107; Telephone (313) 973-8422.

Sales and Marketing by The MARKETING RESOURCE GROUP, Costa Mesa, CA.



Apple is a registered trademark of Apple Computer, Inc. VisiCalc is a registered trademark of VisiCorp, Inc. CP/M is a registered trademark of Digital Research, Inc. VC-EXPAND software is written by Micro Solutions, Inc. Neptune and PSEUDO-DISK are trademarks of Titan Technologies, Inc.

is not a request.

I have been blessed with a WordStar 3.3 Professional package, finally. Unfortunately, the copy MicroPro sent me did not include an Apple III on the installation menu. Although the documentation states that all arrow keys are functional and, additionally, the numeric keypad can be used for control functions, verifying this will have to wait until I can send the disk back and get a correct copy. News as it happens.

Treasure

One of the programs I found in the Apple III software guide is called *Programmer's Power Tools III* by CE Software, 801 73rd St., Des Moines, IA 50312. When I first heard the name I was a bit skeptical. Raised in a consumer environment, the words "new," "improved" or "power" always lead to questions of veracity. Nevertheless, I wrote to CE and they sent me back two pieces of software. One I thought was incredible. It's called Invisicalc. Supplied in 5¼ inch jacket format, the package comes with complete documentation and is both Apple II and III compatible (in fact, it will fit in any drive with a 5¼ inch opening). It's one of the few totally bug-free things I've seen that fully lives up to all that the documentation claims. As the package promises, "Why say 'what if' when you can say 'who cares.'" For those of us who celebrate the arrival of April, it makes an excellent gift.

The other package, Programmer's

Power Tools, was, if at all possible, better and more down to Earth. All along, whenever I've used a Basic program as an example, I've included a procedures section to handle various screen functions and input routines. Believe it or not, PPT takes away any reason to have such procedures and uses two invocable modules to handle everything.

If you wanted to code a series of inputs for some form of database (any information-gathering routine is a database), you could go through a whole rigamarole of programming procedures defining variable length, printing the prompt, setting screen location, defining the length of the response, etc. Rather, with PPT you use a section of your program, like Listing 4, that defines the prompt string, the length of the response and the column and row positions. Then, after invoking the PPT modules, start a FOR...NEXT loop that sends program execution to a line similar to this:

```
X = EXFN%.TEXTGET(@PROMPT$
(NUM),%LENGTH%(NUM),%CON
TROL%,%ROW%(NUM),%COL%(NUM))
where the invoked function is TEXT
GET, PROMPT$(NUM) is your prompt
for the data, LENGTH%(NUM) is the
required response length, ROW%(NUM)
and COL%(NUM) are the screen posi-
tion, leaving us only with the myster-
ious CONTROL%. Look over at Table
2—it's a partial list of the control
functions available through PPT.
```

Once your prompt has been printed at the desired screen location, it still remains for you to get the data in. The CONTROL% number sets the parameters for the entry of that data. It gives us a choice of several keys to use as "fast outs" (keys which, when pressed, will stop entry and return to the main program). The X value at the beginning of the line reports if any of these keys are pressed by being assigned its ASCII value. By adding

to the control number, you can print an underline the same length as the expected response length or format the decimal places allowed in numeric input.

How often have you looked for a Yes or No response in a program and coded for both uppercase and lowercase characters? By inputting the character(s) in a variable and then using:

```
PERFORM UCASE(@variable$)
```

a "y" response becomes "Y" or a longer entry (say, of a name like "Fred Fern") becomes FRED FERN. No other coding is necessary.

Imagine that you want a date. There is a DATEGET function that will print the _/_/_ format and check for valid month and day entries (to a maximum entry of 12 for month and 31 for days, but no checking for valid day-to-month correspondence as would happen with February and day 29).

Have you ever had someone hit the reset button during a disk write and wipe out a perfectly good database? PPT also contains a RESETON/RESETOFF call that enables/disables the control-reset sequence.

Lastly, those of you who have read this column with any regularity know that I have always lamented the inability to format disks without using the System Utilities Disk, a process that meant leaving the current facilities altogether. PPT also has a call to format a disk. X=EXFN%.FORMAT(@NAME\$) will format a disk in the drive and with the volume name contained in the variable NAME\$ (i.e., NAME\$="Dn/VOLUMENAME", where n is the drive number). In this case, X returns an error number if there was a problem while formatting (write protect, etc.).

There are some reservations, however. First, the Apple format driver, FMTDX.DRIVER, must be resident in the SOS.DRIVER file on the boot disk. Second, there is no checking (error or otherwise) of the routine as it performs. That means that if you've placed a valuable disk that you really don't want formatted in the drive you've selected you are now out one valuable disk. Also, the validity of the

```
10 POKE 32,LEFT
20 POKE 33,WIDTH
30 POKE 34,TOP
40 POKE 35,BOTTOM
```

Listing 2a. Setting the display window on the Apple II.

```
10 WINDOW START.COLUMN,START.ROW TO END.COLUMN,END.ROW
```

Listing 2b. Setting the display window on the Apple III.



**THE MOST CHALLENGING
BATTLES IN THE GALAXY.**

You are the Commander and this is your mission ... **PHASE III™**. You will experience three super dangerous adventures in a galaxy where only the clever survive.

AUTOMOTION—Aliens attack relentlessly as you search throughout their complex for pieces of a bomb you must assemble.

GROTTO RUN—You must dodge enemy fire and hanging rock formations as you fly at top speed through the alien grotto to escape before the bomb you set explodes.

TITAN ASSAULT—Flights of alien craft attack with devastating persistence as you zero in to disable their prime planetary installations.

If you do survive all three adventures and accomplish your mission, you shall be rewarded with a more challenging alien complex ... it's your command.

FULL COLOR, ARCADE QUALITY GRAPHICS.

For the Apple II, II+ & IIe Keyboard or Joystick
Apple III Keyboard only Atari version coming soon

**PRISM
PRESENTS...**

PHASE III

Circle 504 on Reader Service card.

Available at the dealer in your local galaxy . . . or order from:

PRISM SOFTWARE • 26600 Southfield Rd. • Lathrup Village, MI 48076 • (313) 559-5067
Visa, MasterCard & American Express Accepted \$29.95 plus \$2.00 Shipping & Handling. Michigan residents add 4%.

Apple is a trademark for Apple Computer.

volume name is left to your discretion. It is possible to create a disk with a volume name that cannot be referred to under normal SOS operations. Using that function would require a little bit of external coding to determine both the propriety of names and the physical characteristics of the disk. Even so, its availability is a thing to be applauded most strenuously.

I have yet to mention the search and sort routines that are performable, and will leave them to your own discovery upon purchasing the package. Let it suffice to say that Programmers' Power Tools III is the most relevant piece of utility software I have yet seen for Business Basic programmers. My understanding is that the invocable modules are available for license and anyone seriously con-

sidering Basic programming on the III would be well advised to contact CE Software. At \$79.95 it will probably pay for itself in the first two hours of use. (P.S., this is probably the strongest recommendation I've ever given anything.)

Commentary

It's often very difficult to say "no" to someone, more difficult still if it's a good friend or a business associate. When the subject is software, and everyone these days (on the user side, at least) seems to be so apathetic about it, sometimes it's easier to just go along and say "Sure, here's a copy." There are times when it seems on the up and up. It might happen that the puppy decided to spare data disks but of course attacked the not-yet-backed-up original disk. You fall vic-

tim to the "I really need to use that software, can you give me a copy until I get mine fixed."

It seems harmless, right? I mean, on that level, it should be perfectly correct to duplicate copyrighted software and extend a courtesy to a friend. Or maybe you're a retailer and your best customer came in with the same story? They did buy it from you originally. Certainly, it must be all right. What about the mechanism behind that? Here's your friend (or customer) who didn't bother to protect what is admittedly a valuable piece of software and you are compounding that negligence. Of course, you're also putting yourself up for a hefty dollar fine, but nobody ever catches the little guys so that makes it all right. Did you ever think of calling up the software manufacturer and finding out how they feel about it? Given the above situation, they might even be agreeable to the loan, providing you could supply valid serial numbers for both disks. With their blessing, you remove yourself from any liability. Without it, you're trying to add two acts of stupidity together and come up with intelligence. You'd have better luck trying the government.

Forget the morality, the ethics, forget the legality of copying software. Morals, ethics, the law, they are all abstracts that constantly give ground to debate. Stupidity, on the other hand, has been a finely developed art, practiced from the inception of the human race. If you can once rationalize stupidity under a given set of circumstances, it becomes much easier later on to rationalize it again, and again. Personally, I can certainly survive someone calling me immoral, or unethical, for that matter. I can live through the "stigma" of illegality. But I'll be hanged for a buck-toothed bear if I'd want someone to think I was stupid. Think about it for a while.

In the meantime, Valentine's Day will soon arrive. Remember to tell someone you love that you do. The words are important. For the time being, live long and program.

Ciao bene, AppleAmerica. ■

Value	Operation
0	No fast outs
1	Use ESCAPE as a fast out (X returns 27)
2	Use RETURN as a fast out (X returns 13)
4	Use LEFT-ARROW as a fast out (X returns 8)
8	Use RIGHT-ARROW as a fast out (X returns 21)
16	Use TAB as a fast out (X returns 9)
32	Use UP-ARROW as a fast out (X returns 11)
64	Use DOWN-ARROW as a fast out (X returns 10)
128	Use OPEN-APPLE keys as a fast out (X returns value of key pressed)
1024	Print the underline characters describing the length of the response immediately, even if fast outs are in effect.
8192	Ignore all characters in the Apple III type-ahead buffer.
16384	Convert the Apple III keyboard to OPEN-APPLE keys.

Table 2. Partial list of control codes.

```

1400 REM
1410 REM *****
1420 REM *
1430 REM * SCREEN *
1440 REM * PROMPTS *
1450 REM *
1460 REM *****
1470 REM
1480 PROMPT$(1)="CUSTOMER NAME:":LENGTH$(1)=35:COL$(1)=1:ROW$(1)=6
1490 PROMPT$(2)="ADDRESS #1:":LENGTH$(2)=30:COL$(2)=4:ROW$(2)=7
1500 PROMPT$(3)="ADDRESS #2:":LENGTH$(3)=30:COL$(3)=4:ROW$(3)=8
1510 PROMPT$(4)="CITY:":LENGTH$(4)=25:COL$(4)=10:ROW$(4)=9
1520 PROMPT$(5)="STATE:":LENGTH$(5)=2:COL$(5)=45:ROW$(5)=9
1530 PROMPT$(6)="ZIP:":LENGTH$(6)=9:COL$(6)=58:ROW$(6)=9
1540 PROMPT$(7)="CONTACT:":LENGTH$(7)=30:COL$(7)=7:ROW$(7)=10
1550 PROMPT$(8)="CUSTOMER CODE:":LENGTH$(8)=5:COL$(8)=1:ROW$(8)=5
1560 PROMPT$(9)="PHONE:":LENGTH$(9)=14:COL$(9)=9:ROW$(9)=11
1570 FOR P=0 TO 9
1580 PROMPT$(P)=CHR$(18)+PROMPT$(P)+CHR$(17)+" "
1590 NEXT P
1600 RETURN

```

Listing 4. Defining values for PPT III.

Instant one-button color printing.



Press here.

It's just that easy! Any time you want to print what's on your Apple's screen just hit the copy button on your Transtar 315 color printer with our PICS card installed, and it's done! No special programming, no lengthy code sequences, no need to exit your program! Just press the button and it prints!

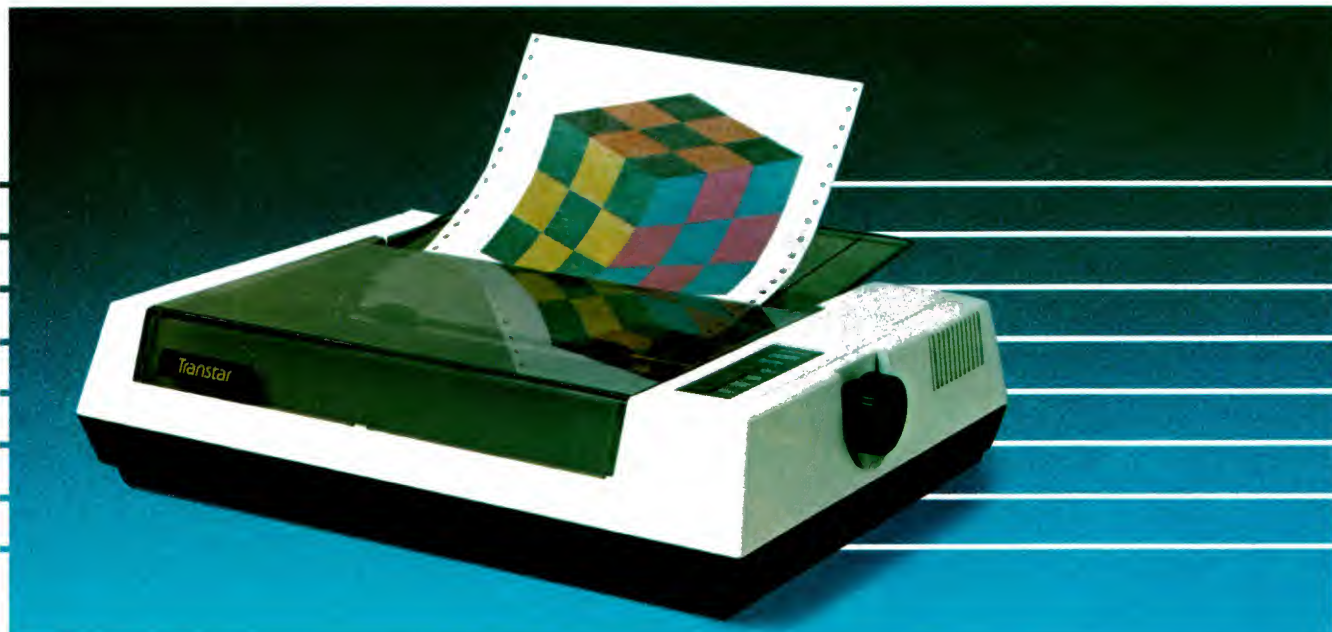
By adding the optional PICS card to your \$599 Transtar 315 color printer, you've opened up a whole new world of easy color printing. For the first time ever, our PICS parallel interface card enables you to screendump virtually any program -- graphics, charts, games -- even copy-protected software! Specially designed only for the Apple II, II+, IIe, and Franklin computers, the Transtar 315 PICS card does the work of a parallel card and a lot more and costs only \$119.95.

At the push of a button, Transtar's innovative new 4-color diagonal ribbon will print up to 7 colors and more than 30 shades in a single pass.

The 315 is precision-built to exacting standards by Seikosha, the most experienced company of the famous Seiko group-- recognized worldwide for quality and dependability. In fact, one of the nicest things about Transtar's 6-month warranty on parts and labor is that you'll probably never use it!

Innovative, inexpensive, dependable, easy: the Transtar 315. Color printing has never looked so good!

Only \$599.



*PICS cards are currently available for Apples and Franklins.
PICS cards for other computers will be available in the future.

Transtar
A Vivitar Computer Product

P.O. Box C-96975, Bellevue, WA 98009



THE SOLAR C



Micros are instigating a revolution in solar building design.

by Bill Smith

We all experience the power of passive solar space heating when we enter an automobile parked in the sun. As such, passive solar design may appear to be a simple process—just orient the structure toward the sun. In fact, passive solar buildings are thermally dynamic structures, involving the complex interaction of many variables. Solar design calculations must compensate for ever-changing external (ambient) temperatures and amounts of available solar energy, and consider orientation, light transmission and tilt of the collecting surface, the building's heat storage capacity, amount and type of insulation, and climate, among others. The computer is an excellent tool for performing these calculations, because it can keep track of the many possible building design variations and offers immediate feedback on how a given change will affect the energy performance of a structure, all without wading through hours and sometimes days of hand calculations.

CONNECTION



The buildings pictured on this page and the preceding two illustrate the types of passive solar systems discussed in "The Solar Connection." The spread on pages 34 and 35 shows the interior and exterior of a bank with south-facing direct gain windows and masses of brick for heat storage. On this page, starting in the lower right, a water wall in another bank consists of water-filled tubes of glazing. A curtain of nighttime insulation on the outside is partially drawn to better display the tubes. Moving clockwise, in the lower left a renovated brick row house employs old balconies (left) as sunspaces (greenhouses) and a wall with windows as a vented Trombe wall. Above the row house, the second story of another brick building has also been faced with glazing to form a vented Trombe wall. This Trombe wall sports an overhang for shading in the warm months. The school in the upper left features a sunspace (below) and an unvented Trombe wall. Finally, in the upper right, a greenhouse of the traditional variety for growing plants serves as a sunspace for a home. The photos were supplied by the New England Solar Energy Association, Brattleboro, VT.



Table 1.
*Formulas for calculating heat conduction
and air exchange.*

1) The formula for heat conduction is $Q = \text{area} \times \Delta T \times \text{time} / R\text{-value}$, where Q is the number of BTUs transferred, area is the square footage of the building component in question, and ΔT is the difference in temperature in degrees Fahrenheit between inside and outside for the time period in question. (When calculated for the entire heating season, the average inside and outside temperatures are used.) Time is the number of hours in question and R-value is a measure of the building component's insulative value, also known as the resistance to heat loss.

2) The formula for air exchange is $Q = \text{volume} \times \text{AC/hr} \times \Delta T \times \text{time} \times .018$, where Q is the number of BTUs transferred, volume is the volume of the structure, AC/hr is the structure's air exchange rate, and ΔT and time are the same as for heat conduction. The constant .018 is the product of the air density and the specific heat of air, which varies according to altitude.

Passive solar design is such a new field that designers have largely missed the era of mainframe computers. Today, at least 15 microcomputer software packages exist, many for the Apple, that can help evaluate a building's energy performance and cost-effectiveness. All are valuable tools for planning buildings that work well. See "A Solar Survey" and "F-Load: A Solar Design Tool" in this issue for information on a number of these packages.

Passive solar space heating can be defined as that form of solar heating in which the building itself is a solar collector. A typical passive solar building simply incorporates a large expanse of south-facing glass that allows considerable low-angled wintertime sunlight to enter. After passing into the building, this light strikes solid objects and is converted into heat. While the glass transmits shortwave radiation (light) coming in, it largely retards the passage of longwave radiation (heat) going out. Simply put, when the solar gain (input) is greater than the heat loss, the building stays warm from the heat of the sun (the "greenhouse effect"). When the heat loss is greater than the solar gain (at night, for instance), the building may need auxiliary heat.

Auxiliary energy need is the key indicator of a building's energy performance. Energy performance is usually defined as the amount of auxiliary energy the building needs to maintain a given temperature (say 70° F) for the entire winter. That amount is often expressed in millions of British Thermal Units. (One BTU is the amount of heat necessary to raise the temperature of one pound of water one degree Fahrenheit. It is approximately equal to the heat given off by a single wooden match.) It can also be expressed in gallons of oil, cubic feet of gas, kilowatt hours of electricity, or even dollars.

Calculating Heat Loss

The first step in the computer-aided design process is to calculate a building's yearly heat loss. These calculations are fairly standardized and are

usually based on the methods developed by the American Society of Heating and Refrigeration Engineers, also known as ASHRAE. Heat loss calculations are divided into two types to represent the two major forms of heat loss in a typical home: heat conduction and air exchange.

Heat conduction is the transfer of heat through solid objects. (You feel conducted heat when you touch the handle of a hot frying pan.) The calculation is done for every major surface and takes into account its size and degree of insulation (R-value), and the temperature difference between outside (ambient) and that desired inside.

Air exchange (infiltration) is the process of cold air leaking into the structure and warm air leaking out because of inadequate sealing. The air exchange calculation is done for the building as a whole, and takes into account the structure's volume and airtightness, and the temperature differential. (Keep in mind that airtightness can really be known only after the building is built and only if it is specifically measured.) See Table 1 for formulas for calculating heat conduction and air exchange.

The sum of heat conduction and air exchange is the total heat loss. In the pre-solar era, heat loss calculations were all that were necessary to determine a building's auxiliary energy needs, because without significant solar input, the auxiliary energy needs are equal to the total heat loss. In a solar building, the auxiliary needs are equal to the total heat loss minus the solar energy gain.

Calculating Solar Gain

Most solar calculation methods are based on the work done at the Los Alamos National Laboratory and are detailed in two books from the American Solar Energy Society, *The Passive Solar Design Handbook*,

Volume II (Douglas Balcomb, ed.) and *The Passive Solar Design Handbook, Volume III* (Robert Jones, ed.). These Los Alamos scientists were among the first to exhaustively monitor solar buildings with the aid of a computer. Their detailed computer models predicted how theoretical structures would perform. These predictions were compared to actual temperatures in test buildings, which then led to further refinement of the computer models. Virtually every solar software package that exists today and calculates a building's yearly energy performance is a distillation of these Los Alamos computer models. Much of what follows is based on one such package for the Apple, SUNPAS from Solarsoft Inc., Box 124, Snowmass, CO 81654.

The purpose of solar calculations is to determine the amount of energy received from the sun that is useful in reducing a building's auxiliary energy needs. The process is begun by translating raw solar radiation data based on one square foot of shaded horizontal collector surface into the number of BTU that strike the total area of each collection surface (typically glass), taking tilt and compass orientation into account. This data is available for your region for every month of the year (in the form of BTU per square foot on an average day) from the *Passive Solar Design Handbook* and the National Atmospheric and Oceanic Administration.

In the Northern Hemisphere, the

Bill Smith is the solar and superinsulation designer at the New Alchemy Institute on Cape Cod, a non-profit research and education organization dedicated to developing sustainable technologies for providing food, energy, shelter and landscape design. He also acts as an energy consultant to architects, builders and homeowners. Write to him at New Alchemy, 237 Hatchville Road, East Falmouth, MA 02536.

BASE CASE WITH MOVABLE INSULATION

=====

YEARLY ENERGY SUMMARY

=====

MONTH	GROSS SOLAR	HEAT LOSS	INT GAINS	USEFUL SOLAR	AUX HEAT
JAN	1.7	5.2	1.9	1.2	2.1
FEB	1.7	4.6	1.7	1.2	1.7
MAR	1.6	4.0	1.9	1.1	1.1
APR	1.2	2.8	1.8	0.7	0.3
MAY	1.1	1.6	1.6	0.0	0.0
JUN	1.0	0.5	0.5	0.0	0.0
JUL	1.1	0.0	0.0	0.0	0.0
AUG	1.2	0.0	0.0	0.0	0.0
SEP	1.5	0.7	0.7	0.0	0.0
OCT	2.0	2.2	1.8	0.4	0.0
NOV	1.5	3.2	1.8	0.9	0.5
DEC	1.4	4.4	1.9	1.0	1.6
YEAR	17.1	29.2	15.5	6.5	7.2

Table 2.

SUNPAS Yearly Energy Summary tabular printout.

cally varies this correction factor from 0.5 to 1.3, where 0.5 represents a 50 percent reduction, 1.0 represents no reduction or additional gain, and 1.3 represents 130 percent of the "normal" gain.

Passive Solar Systems

As if all of these options weren't enough, the solar designer can also select from five different types of passive solar construction, as defined by the third volume of the *Passive Solar Design Handbook*. These include a direct gain system, a greenhouse, a Trombe wall, a Trombe wall that's vented into the living space, and a water wall.

A direct gain system is the simplest form—an expanse of south-facing glass that admits the low winter sun. Attached greenhouses are the most well-known type, and can expand a home's living or vegetable-growing area. Trombe walls and water walls are systems in which a thermal mass is placed directly behind an expanse of south-facing glass. The thermal mass in a Trombe wall is usually concrete or brick.

System Variables

Direct gain systems can vary in thermal storage capacity, ratio of thermal mass to glazing area, number of glazing layers, and the use of movable night insulation. Attached greenhouses can be enclosed within the house or merely appended, the wall common with the building can be masonry or insulated, end walls can be opaque, glazed, or common with the building, movable night insulation can be used or not, and the tilt of the glazing can be varied. With Trombe and water walls, options include thermal storage capacity, wall thickness, number of glazings, normal or selective surface, and the use of movable night insulation. (A selective surface absorbs solar radiation at a faster rate than a normal surface.) In total, the designer can choose among 94 types of passive solar systems.

Program Output

The Yearly Energy Summary table (Table 2) and bar graph (Figure 1) are the most useful outputs of the SUNPAS program. The graph is merely a picto-

optimal orientation is due south and the optimal glass tilt is 15 degrees greater than your latitude. The theoretical optimum is not always the most practical, however, so the computer is very helpful in determining just what kind of penalty you will incur by straying from the optimum. Many solar designers will orient a building slightly east of south, in order to get more morning sun and to thus "wake up" a building.

At a latitude of 45 degrees, a 60-degree tilt is optimum for heat collection purposes, but is also hard to build and tends to overheat the building in the summer. Thus, many designers opt for vertical glass, which does not collect quite as much heat during the winter, but is much easier to build and, especially with an overhang, does not tend to overheat the structure during summer. Vertical glass also has the advantage of collecting a little extra sunlight reflected from snow.

An overhang is usually placed above vertical glass to block out the high summer sun, yet pass the low winter sun. However, it does block some sunlight during cool seasons and pass some during warm seasons. To achieve the best balance, solar software allows the designer to vary the degree of overhang.

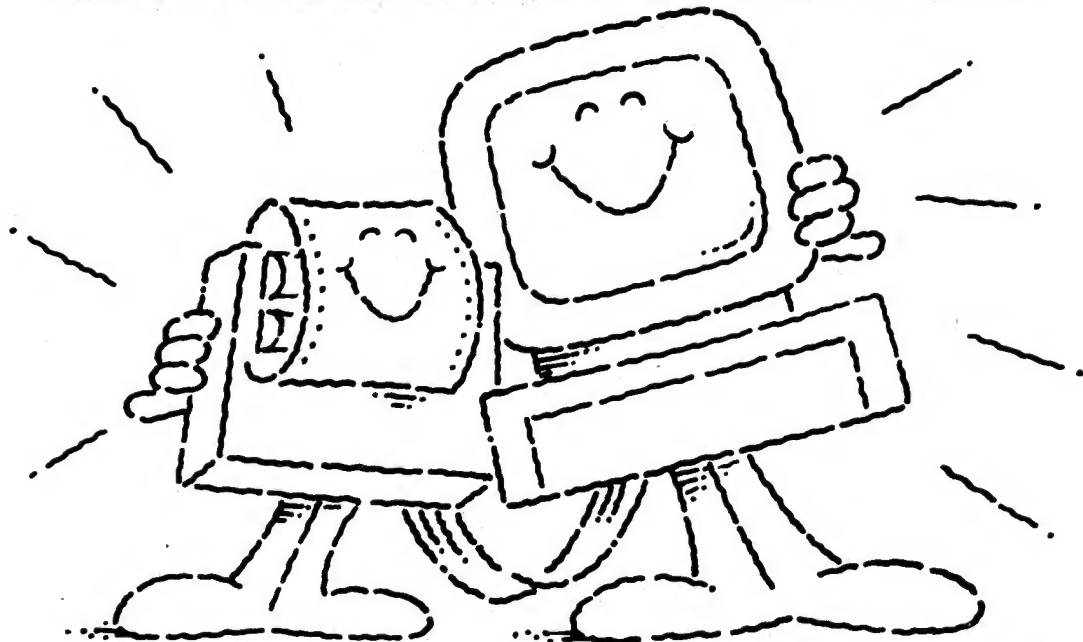
Different types of glass and plastic glazings vary in their ability to transmit sunlight (transmissivity). For space

heating purposes, the higher the transmissivity the more solar gain. By varying the transmissivity parameter, the solar designer can compare the performance of various types of glazings.

After passing through the glazing, sunlight strikes interior objects and converts to heat. If those interior objects are lightweight, they quickly absorb all the heat they can and start releasing excess to the surrounding air. Even in the middle of winter, a lightweight building with a lot of south-facing glass will get unbearably hot in the course of a day and retain little heat for the night. Passive solar buildings, therefore, must incorporate materials (usually masonry or water) called thermal masses that are good at absorbing and holding heat during the day to be released at night when it is needed most. Absorptivity is a quantification of this storage capacity. By varying the absorptivity parameter, the designer can gauge the effectiveness of various storage systems.

In addition to the above variables, solar software includes a correction factor for shading from adjacent buildings or trees, and additional gain due to reflection from snow, water or man-made materials. If deciduous trees lie to the south, the shading factor will vary depending on how many leaves are on the trees. Also, the low winter-time sun tends to be blocked by neighboring buildings and trees. With the SUNPAS program, the designer typi-

MEET THE PERIPHERAL MATCHMAKERS.



SCOOTER™ HIGH GRADE CABLE ASSEMBLIES FOR ALL YOUR SYSTEMS' CONNECTION NEEDS.

You've just spent weeks, maybe months, matching up the right computer with the right printer with the right monitor.

Now that you've decided, get them all together with the right interface cables: SCOOTER™ High Grade Cable Assemblies.

SCOOTER makes dozens of standard interface cables. And, if you can't find what you need, ask your computer dealer about SCOOTER's custom service. It's surprisingly affordable.

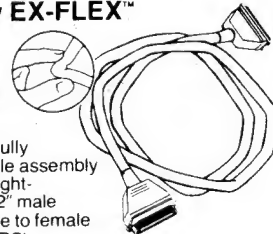
As for quality, SCOOTER tests each and every cable assembly before packaging. And they're just part of a whole line of high grade electronic components and surge-protected outlet strips designed for computers.

Ask for SCOOTER High Grade Cable Assemblies



wherever you buy computer supplies. Because when it comes to peripheral matchmaking, they're matchless.

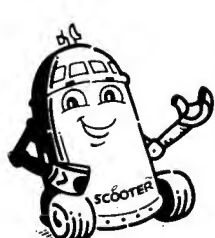
SCOOTER's new EX-FLEX™ Fully Shielded Centronics-type Cable Assembly



Flat cable technology in a fully shielded 36-conductor cable assembly that's extra flexible, extra lightweight. Now available in 42" male to male (SCA42PP) or male to female (SCA42PS, SCA6PS).

Suggested Resale: **\$44.95.**

Also available in 6-foot length (SCA6PP and SCA6PS).
Suggested resale: **\$52.50.**



SCOOTER™
High Grade Cable Assemblies

ohm/electronics
746 Vermont • Palatine, IL 60067
(312) 359-6040

FREE SCOOTER T-SHIRT WHEN YOU BUY ANY SCOOTER CABLE ASSEMBLY

Just send this coupon along with your sales receipt
and your name, address, computer make

and T-shirt size to:

ohm/electronics

746 Vermont St., Palatine, IL 60067

(312) 359-6040

I-0284

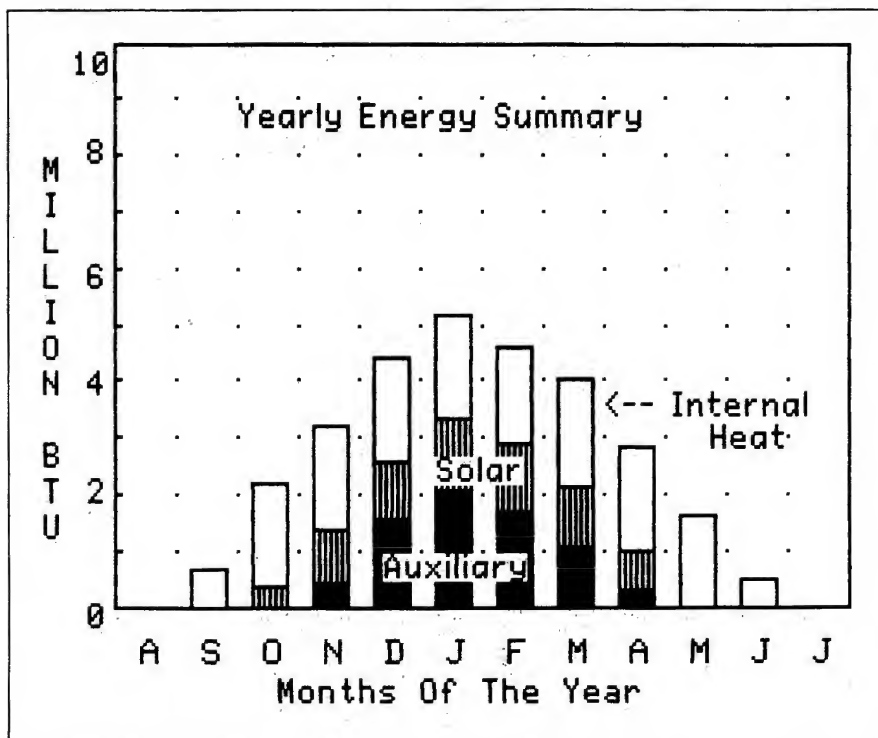


Figure 1.
SUNPAS Yearly Energy Summary graph
printout.

heating system for a particular month to maintain the average temperature. The total of this column is the most significant item on the table, and should be used to compare various building configurations. To convert to dollars, multiply by \$23 (approximately) for electric and \$10 (approximately) for oil. The building represented here has a remarkably low heating need because it is well-exposed to the sun, is virtually airtight and is superinsulated.

The bar graph illustrates the energy performance of the building from August to July. The vertical scale is in million BTU. The white area represents internal heat gains, the striped is the solar gains, and the black is the auxiliary heating requirement.

The Yearly Energy Cost graph (Figure 2) illustrates the effect of increasing or decreasing the south-facing glazing area on the building's heating costs. The curves for oil, gas and electricity represent the heating costs for each auxiliary fuel. As you can see, the heating costs decrease as the south-facing glazing area increases.

Other Systems

While I have discussed only passive solar here, there are other types of solar software, including active solar, daylighting and photovoltaics. (See "A Solar Survey" for available packages.) Active systems involve the mechanical transport of heat in a medium such as air or water from a roof- or ground-mounted collector to a heat storage system. This heat is then pumped, as needed, to where it will be used in the building for space heating or hot water.

Daylighting systems use sunlight to offset needs for artificial light. Photovoltaic systems use silicon cells to convert solar radiation into direct current electricity. (See "The Alternative Apple" in this issue for a description of how you could run your Apple from such a source.)

Solar design, as we have seen, involves many considerations. SUNPAS and its ilk can go a long way in determining the best configuration for your needs. This brief survey will, I hope, help you understand what these programs can—and cannot—do. ■

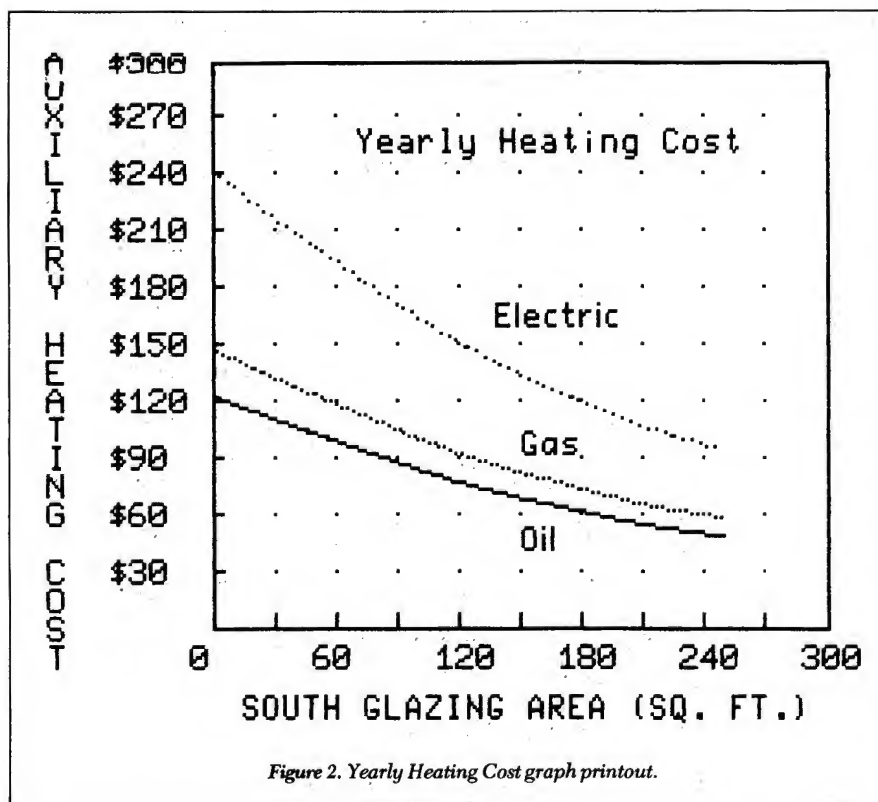


Figure 2. Yearly Heating Cost graph printout.

rial representation of the table. All numbers are in million BTU. Gross Solar is the total amount of solar radiation transmitted into and absorbed by the building. Useful Solar is that portion of Gross Solar that helps to offset auxiliary heating needs, without overheating the building.

Heat Loss is the total heat loss experienced by the building for a month. It

is identical with the total of auxiliary, solar and internal gains, and is represented by the top of each bar in the bar graph.

Internal Gain is heat derived from people, appliances and lights that is useful in offsetting auxiliary heating needs.

Auxiliary Heat is the total number of BTU required of the auxiliary

Be confident because your PowerType Daisywheel correspondence becomes you.

When you can't personally be there, only the clearest typed correspondence should be your substitute. With a PowerType Daisywheel printer your documents look highly professional. And so do you!

PowerType. It's "typewriter friendly." Using a simple drop-in ribbon cassette, it bi-directionally types executive quality correspondence at 18 cps with a print wheel that holds 96 flawless characters.

Designed for personal or business applications, PowerType's carriage accepts paper that ranges

from letter to legal size, from fanfold to roll to cut sheet. You can set right and left margins, vertical and horizontal tabs.

Plus, of course, PowerType has both serial and parallel interfaces to enable it to connect to just about any personal or business computer.

So the next time you're going face to face through the mail, rely on PowerType. It will help you make a professional impression. And that's always very becoming.

star
MICRONICS INC.

THE POWER BEHIND THE PRINTED WORD.

Computer Peripherals Division

P.O. Box 612186, Dallas/Ft. Worth Airport, TX 75261 (214) 456-0052



A Solar Survey

Here is a comprehensive guide to software that will help you and your Apple plan a solar building.

by Terry Brennan

There are numerous software packages on the market for use in planning buildings designed to meet some of their energy needs with solar radiation. These programs project energy yields and losses as the values of building parameters are changed. This data then helps the designer decide what building configuration will be most energy efficient. (See "The Solar Connection" in this issue for a more detailed discussion of such planning.)

This compendium of software aids will help anyone intending to use an Apple in designing a new solar building, or a solar retrofit, to zero in on the program best suited to their needs. The software is divided into three types:

- 1) *loads* programs that estimate conventional heating and cooling needs, taking into account adding solar energy to a building, adding extra insulation, sealing tightly and improving equipment efficiency;
- 2) *daylighting* programs that project lighting levels in buildings with an eye to replacing electric lights with daylight from windows; and
- 3) *photovoltaic* programs that estimate the amount of electricity that can be derived from solar cells that convert sunlight directly to electricity. (See "The Alternative Apple" in this issue for a description of how your computer can be run from such a source.)

Loads programs vary in the sophistication of the algorithms used to do the calculations and in their suitability for use on residential or commercial buildings. Also, some loads programs do *monthly* load calculations based on the available solar energy and outside temperature for the average day of the

month, and the physical characteristics of the building. Others make *hourly* load calculations based on solar energy and temperature data for each hour of the day. Although mainframe programs of this type solve the heat flow equations for each hour of the year, the runtimes required to do this on micros are several hours, so hourly calculation programs for micros have adopted statistical methods of compressing hourly data to a few dozen typical days per year.

F-Chart programs use a simplified monthly loads calculation in combination with a calculation to estimate the performance of active solar systems.

Monthly Loads Programs

Monthly loads programs are most suited to residential analysis.

SUNPAS covers passive solar including direct gain, mass walls and attached greenhouses. One of the most sophisticated of the many programs based on solar correlations developed at the Los Alamos Scientific Laboratory, this program packs a great deal of information into the output, including good quality charts and graphs. SUN-OP is an economic analysis program accompanying SUNPAS. Contact Solarsoft, Box 124, Snowmass, CO 81654. Price, including both programs, is \$400.

SLR covers passive solar including direct gain, mass walls and attached greenhouses. It is a good easy-to-use program, also based on the LASL solar methodology. Contact Alternologies, Box 1008, Fort Collins, CO 80522.

F-Load covers passive solar direct gain and mass walls, but not green-

houses. Based on fundamental physical principles, the calculations are far more flexible than those based on correlations. The methodology was developed by the authors to be used as a computerized calculation procedure. F-Load incorporates easy-to-use on-screen editing. See "F-Load: A Solar Design Tool" in this issue for a detailed review of the program. Contact F-Chart Software, 4406 Fox Bluff Road, Middleton, WI 53562. Price \$425, with updates for \$35 each.

Hourly Loads Programs

TSWING covers passive solar including direct gain, mass walls and greenhouses. Hourly temperature profiles of room and ambient (outside) air, and thermal masses are output in tabular and graphic form. Sophisticated treatment of energy flows is limited to hourly calculations of 14 days. Although this is sufficient for using compressed weather data to make yearly estimates of energy performance, the program is not set up to do so. TSWING is most valuable for closely examining comfort issues under a variety of conditions. A separate accompanying program, SOLGAIN, interprets the TSWING data for the user. Contact Solarsoft, Box 124, Snowmass, CO 81654. Price for the package is \$400.

MICROPAS also covers passive solar including direct gain, mass walls and greenhouses on an hourly, monthly and yearly basis. This is the most sophisticated program available for the

Terry Brennan, RD #4, Box 62, Rome NY 13440, is owner of Redwing, a building energy design and analysis firm, and writes energy analysis software.

Apple that has short enough runtimes to be of use to the average designer. It will analyze three zones and output information in a variety of formats. MICROPAS is suitable for some commercial applications. For the Apple, it requires 64K and CP/M. Contact Enercomp, 2655 Portage Bay, Suite 6, Davis, CA 95616. Price is \$795 for the CP/M version.

F-Chart Programs

F-Chart programs to estimate the performance of active solar air- and water-based systems are available from F-Chart Software (the originators of the method), 4406 Fox Bluff Road, Middleton, WI 53562, price \$400 (\$35 for updates); and Solarsoft, Box 124, Snowmass, CO 81654, price \$400.

Daylighting Programs

Daylighting programs predict potential natural illumination levels at any point in a building. Armed with this knowledge, a designer can provide for substantial energy savings in buildings that use a lot of electric lights during the daylight hours by substituting sunlight. Office buildings and schools are good candidates for this type of conservation plan because of their schedules and because of the size of their lighting bills.

The following daylighting programs are currently available for Apples:

MICROLITE. To obtain MICROLITE you must join the Designers' Software Exchange, Room 4-209, MIT, 77 Massachusetts Ave., Cambridge, MA 02139, for \$25. Then the program is available for an additional \$25. However, if a program of your own is accepted by the Exchange, you can get ten others, including MICROLITE, free.

DAYLITE from Solarsoft, Box 124, Snowmass, CO 81654. Price \$750.

Photovoltaic Programs

Photovoltaic programs are used to estimate the contribution a system of solar cells will make to the electricity needed by a building. Advances currently being made in this field promise to make this technology widespread within the next decade. Although several programs have been written to

project photovoltaic performance, only one, *PV F-Chart*, is currently being marketed. It is available from F-Chart Software, 4406 Fox Bluff Road, Middleton, WI 53562. Price \$400, plus \$35 each for updates.

For the Layperson

The following two programs touted as appropriate to the non-professional have been appended to "A Solar Survey" by the *inCider* staff. Information is from the software vendors. We hope to review these programs in the near future.

HOTCAN 2 predicts heat loss and solar gain for a structure on a monthly or yearly basis. Input includes R-value and area of structural surfaces, number of glazings on windows, geographic location, and more. Output appears as dollar cost per month or year. The Apple version includes climatic data for 12 locations in Canada, with space for four user-provided alternatives. Improvements contained in **HOTCAN 3**, currently in preparation, will include U.S. weather data, an enhanced foundation loss routine and solar gains for the 45° directions (NE, SE, SW, NW). Contact the Division of Building Research, National Research Council of Canada, Saskatoon, Saskatchewan S7N 0W9. Price is \$25, Canadian funds, payable to the Receiver General of Canada.

The Home Energy Opti-Miser is a highly interactive program that includes an extensive workbook to use in input preparation. Output indicates where heat loss is occurring and how significant it is, and recommends specific measures for alleviating the problem. Six thousand possible energy system configurations are offered for the user's consideration. Contact Shelter Software, Box 527, Emmaus, PA 18049. Price is \$24.95.

The Solar Energy Research Institute has compiled a booklet, *Microcomputer Methods for Solar Design and Analysis*, listing 30 software packages covering all aspects of passive and active solar design. Each listing includes the name and address of the vendor, price, and machines the program runs on. Send \$7 (prepayment is a must) to SERI Document Distribution Service, 1617 Cole Blvd., Golden, CO 80401. ■

**Improved
Again!**

Insure against disk loss with Back It Up III™

Want to make back-up copies of all that valuable software you purchased for your Apple computer? BACK IT UP III helps you do it quickly and easily. Think of it as low-cost insurance for your disk library.

BACK IT UP III enables you to copy almost every kind of "protected" disk. You'll find BACK IT UP III an invaluable addition to your library, even if you already own another nibble copy program or a "copy card." In fact, the combination of BACK IT UP III and a "copy card" is almost unbeatable!

Standard features that have made Back It Up II + a best seller include: 1) automatic half-tracking, 2) preserving nibble counts, 3) synchronizing tracks, 4) Quick Scan disk previewing, 5) diskette erasing, 6) Automatic decoding of "unreadable" tracks, 7) Nibble reader for in-depth analysis of unusual disk formats, and 8) a comprehensive set of optional parameter changes allowing BACK IT UP III to copy new protection schemes as they are introduced.

Exclusive new features include: an automatic decode option for "4 x 4 encoded" tracks with an optional checksum-verification of the copy, an improved automatic decode option for DOS-sectored tracks; a disk speed check that gives the same answers as Apple's dealer diagnostics, and a disk drive quality test.

Other new advantages include a disk certification test and the ability to automatically detect and reproduce "synchronization" bytes using an automatic "bit insertion" technique.

BACK IT UP III can even convert some half-track programs for use on Micro-Sci disk drives.

BACK IT UP III is also the only nibble-copy program that gives you a comprehensive tutorial on nibble copying and protection techniques and instructions for repairing "blown" disks. Use it with Apple IIe, Apple II + or Apple-compatible computers. Two disk drives recommended.

Important Notice: This product is intended SOLELY for the computerist who desires to take advantage of his legal right (under federal copyright law) to make archival copies of computer programs that he has purchased.

Protect your investment in expensive software products with the powerful one—BACK IT UP III! Available for only \$74.95 from:

Sensible Software, Inc.

6619 Perham Drive
West Bloomfield, MI 48033
(313) 399-8877

Visa, Master Card, checks and COD welcome. Please add \$1.25 for postage and handling.

F-Load

A Solar Design Tool

Our reviewer has worked extensively with this solar design package and finds it the cream of the crop.

by Joe Kohler

Passive solar and super-insulated buildings are increasingly capturing the interest of homebuyers. Thermal performance has suddenly become an important factor to consider when designing a house. Many architects, mechanical engineers and energy analysts are looking to computer design tools to help size passive glazing areas and to find the best insulation levels for walls and ceilings. Some builders and developers find that a computer print-out of energy use is a useful sales tool. (See "The Solar Connection" in this issue for a discussion of the basics of passive solar design.)

F-Load, a program for the Apple created by Beckman and Associates, is one of several programs that have recently been marketed to calculate the energy use of residential buildings. (See "A Solar Survey" in this issue for a compendium.) These energy analysis programs calculate the monthly heating energy requirements of homes, accounting for solar energy gains (input) through passive systems. Most are based on Solar Load Ratio (SLR) correlations developed at the Los Alamos Scientific Laboratories by a team headed by J. Douglas Balcomb. (See the *Passive Solar Design Handbook, Volume III*, American Solar Energy Society Inc.) F-Load, however, is based on a substantially different algorithm, developed at the University of Wisconsin Solar Energy Laboratory and the National Bureau of Standards. As a result, F-Load has many features not

found in other programs.

F-Load is unique in that it calculates cooling loads as well as heating loads, which makes it valuable for analyzing houses in areas of the country where cooling is an important consideration. In addition, F-Load models the performance of heating and cooling equipment instead of simply assuming a "seasonal efficiency," as most other programs do. F-Load also more accurately accounts for the effect of setting a thermostat back than most other programs. And it can perform a detailed economic analysis if that is desired.

Using F-Load

F-Load is an interactive, "user-friendly" program with extensive error trapping and default values for all parameters. It can work in either English or SI (Système International) units.

When you boot up F-Load, you have three choices:

- 1) run F-Load Energy Analysis,
- 2) enter Equipment Specifications, and
- 3) run Sysgen program.

The Sysgen program modifies F-Load for your particular computer system. You enter the number of disk drives, information about your printer, and your name and address for use in the program heading. It is only necessary to run Sysgen the first time you use F-Load, or if you make

alterations in your system.

The *Equipment Specifications* program is used to input parameters that describe the heating and cooling equipment that will be used in the house being analyzed. Required information includes the heating and cooling capacity (the size of the equipment necessary for the coldest and hottest days), and the efficiency of the equipment as a function of temperature. Also needed is data on the efficiency of equipment when it is operating at only part of its capacity. If you're not a mechanical engineer familiar with equipment, you will probably find it difficult to get some of this information and put it in the correct format. The program contains defaults for most common heating and cooling systems, but the efficiency of equipment does vary a lot. Once the data is obtained, it can be stored on disk for use with other buildings.

Another minor difficulty arises from the fact that you need to specify the capacity of the equipment in order to run this program. However, the ca-

Joe Kohler holds a Ph.D. in chemical engineering and is a registered professional engineer in New Hampshire. He is a principal at KLR Engineering in Keene, NH, a mechanical engineering and energy consulting firm that specializes in renewable energy systems. He'd be pleased to have you write him at KLR Engineering, 438 Washington St., Keene, NH 03431.

capacity isn't really known until you run the Energy Analysis program. Unless you are experienced at estimating equipment capacity, you may need to run the program twice—once to size the equipment, and then again to model the equipment properly.

Energy Analysis

The *Energy Analysis* program is the heart of F-Load. This is where the building and its passive systems are described and data regarding the location, occupancy, and so forth, is entered.

The data input routine is particularly nice. The first screen contains a listing of *Basic Building* parameters and their default values (Figure 1). Simply enter the parameter numbers and the new values for any parameters that you wish to change.

The next several screens contain the *Wall* parameters (Figure 2). Each wall can have a different orientation. Windows will have different day and night R-values to account for night insulation, and can be at any tilt. The program "knows" the number of glazings based on the day R-value, and estimates solar transmittance accordingly. Any wall thus accounts for passive solar gains. There are two special passive solar walls: a storage (Trombe) wall and a direct gain wall (Figure 3). The routines for these walls allow you to model a fixed overhang. With the direct gain wall you can also specify both the R-value and the number of layers of glazing, which might be necessary with some of the new glazing materials.

Following the Wall parameters, the *Roof-Basement-Garage*, *Internal Space* (Figure 4) and *Economics* screens appear. The Roof-Basement-Garage routine allows you to model slab on grade, crawl spaces, basements (or any combination) and attached garages. The equipment files created in the Equipment program are entered on the Internal Space screen, along with the number of people, the type of domestic hot water (DHW) heater, and thermostat settings for heating and cooling.

Editing F-Load inputs is easy. For example, to change parameter 2 in Basic Building to 90 degrees (to deter-

mine the effect of rotating the building) type B 2 90. To list parameters for Internal Space type I L.

When all the data is entered, the building description can be saved on disk. Then it's time to press C to begin the calculations.

F-Load Output

F-Load provides four levels of output. Level 2, an annual summary, appears in Figure 5. It shows the heating losses or cooling gains through individual building components, the total en-

```

** BASIC BUILDING **
1 CITY LOCATION..... 164
2 REFERENCE ANGLE WRT SOUTH..... 0 DEG
3 HEATED AIR VOLUME..... 11355 FT3
4 CONSTR QUAL (0 TO 3 OR NEG)... 1
5 NUMBER OF EXTERIOR WALLS..... 8
6 SET ALL EXTERIOR WALL R-VALUES 16.4 FT2-HR-F/BTU
7 SET ALL WINDOW DAY R-VALUES... 2.2 FT2-HR-F/BTU
8 SET ALL WINDOW NIGHT R-VALUES 2.7 FT2-HR-F/BTU
9 STORAGE CAP (0 TO 3 OR NEG)... 1
10 OUTPUT 1=SUMMARY TO 4=DETAILED 3
11 GRAPHIC OUTPUT? 1=Y 2=N..... 2

```

Figure 1. Sample input for the Basic Building routine.

```

** WALL 1 **
1 ORIENTATION WRT TO REFERENCE.. 0 DEG
2 GROSS WALL AREA..... 306 FT2
3 EXTERIOR WALL R-VALUE..... 16.4 FT2-HR-F/BTU
4 WINDOW AREA..... 56 FT2
5 WINDOW DAYTIME R-VALUE..... 2.2 FT2-HR-F/BTU
6 WINDOW NIGHTTIME R-VALUE..... 2.7 FT2-HR-F/BTU
7 WINDOW % OF TIME SHADED..... 0 %
8 DOOR AREA..... 21 FT2
9 DOOR R-VALUE..... 2.56 FT2-HR-F/BTU
10 WINDOW TILT FROM HORIZONTAL... 90 DEG
11 WALL SOLAR ABSORPTIVITY..... .4

```

Figure 2. Sample input for the Ordinary Wall routine.

```

** WALL 7 STORAGE WALL **
1 ORIENTATION WRT REFERENCE..... 0 DEG
2 STORAGE WALL AREA..... 200 FT2
3 NUMBER OF GLAZINGS (1 TO 4)... 2
4 WALL THICKNESS..... 1.5 FT
5 WALL THERMAL CONDUCTIVITY..... 1 BTU/HR-FT-F
6 WALL SPECIFIC HEAT*DENSITY... 30 BTU/FT3-F
7 WALL SOLAR ABSORPTANCE..... .9
8 NIGHT INSULATION R-VALUE..... 0 FT2-HR-F/BTU
9 OVERHANG SHADING? 1=Y 2=N..... 2
10 WIDTH OF WINDOW..... 0 FT
11 PROJECTION OF OVERHANG... 0 FT
12 OVERHANG-WINDOW GAP..... 0 FT

** WALL 8 DIRECT GAIN **
1 ORIENTATION WRT REFERENCE..... 0 DEG
2 DIRECT GAIN WINDOW AREA..... 200 FT2
3 NUMBER OF GLAZINGS (1 TO 4)... 2
4 DAYTIME GLAZING R-VALUE..... 1.8 FT2-HR-F/BTU
5 NIGHTTIME GLAZING R-VALUE..... 1.8 FT2-HR-F/BTU
6 OVERHANG SHADING? 1=Y 2=N..... 2
7 WIDTH OF WINDOW..... 0 FT
8 PROJECTION OF OVERHANG... 0 FT
9 WINDOW-OVERHANG GAP..... 0 FT

```

Figure 3. Sample input for the Storage Wall and Direct Gain Wall routines.

```

** INTERNAL SPACE **
1 ANNUAL ELECTRICAL CONSUMPTION. 8000 KW
2 AVERAGE NUMBER OF OCCUPANTS... 4
3 HEATING LOAD CALC (1=Y 2=N)... 1
4 DAYTIME THERMOSTAT SETTING.. 72 F
5 NIGHTTIME THERMOSTAT SETTING 68 F
6 EQUIPMENT FILE NAME..... FURNACE
7 COOLING LOAD CALC (1=Y 2=N)... 1
8 DAYTIME THERMOSTAT SETTING.. 78 F
9 NIGHTTIME THERMOSTAT SETTING 78 F
10 ROOM RELATIVE HUMIDITY..... 40 %
11 VENTILATION (1=Y 2=N)..... 1
12 MOISTURE GENERATION..... .5 LBM/HR
13 EQUIPMENT FILE NAME..... AIRCOND
14 HOURS FOR NIGHT SETTING..... 8 HOURS
15 ALLOWABLE TEMPERATURE SWING... 9 F
16 VENTILATION HX EFFECTIVENESS.. 0 %
17 VENTILATION HX FLOWRATE..... 0 CFM
18 DHW CALCULATION (1=Y 2=N)..... 1
19 DHW LOSS TO SPACE (1=Y 2=N)... 2
20 DHW(1=EL;2=NG;3=OIL;4=OTHER) 1
21 WATER HEATER EFFICIENCY..... 100 %
22 AVERAGE DAILY HOT WATER USE. 80 GALLONS
23 HOT WATER SET TEMPERATURE... 140 F
24 R-VALUE OF TANK INSULATION.. 2 FT2-HR-F/BTU
25 HOT WATER TANK VOLUME..... 40 GALLONS

```

Figure 4. Sample input for the Internal Space routine.

velope (ENV) losses or gains, the total solar and internal gains from people and equipment (GAIN), the EXCESS gains that can't be used for heating, the dehumidification (LATENT)

loads, and the final heating (AUX) and cooling (A/C) loads. It also shows the design heating and cooling loads that you need to size the equipment, and it gives the purchased energy require-

```

*** HEATING ENERGY (MMBTU) ***
ALL WALLS
MONTH WALL WINDOW DOOR SOLAR
YR 19.76 7.34 5.14 15.14

MONTH ROOF BSMT INFIL GARAGE
YR 7.02 5.59 17.86 8.38

MONTH (ENV) GAIN EXCESS AUX
YR 65.49 49.62 20.58 36.46

*** COOLING ENERGY (MMBTU) ***
ALL WALLS
MONTH WALL WINDOW DOOR SOLAR
YR 0.00 0.00 0.00 15.14

MONTH ROOF BSMT INFIL GARAGE
YR 0.00 0.00 0.00 0.00

MONTH ENV GAIN LATENT A/C
YR 0.01 49.62 0.80 3.37

*** DESIGN VALUES ***
DESIGN HEATING LOAD = 31400 BTU/HR
LOSS/(AREA-DD) = 6.5 BTU/FT2-F-DAY
DESIGN COOLING LOAD = 14200 BTU/HR

*** PURCHASED ENERGY (MMBTU) ***
HEATING
MONTH AUX DEL SHORT PURCH
YR 36.46 36.46 0.00 48.61

*** PURCHASED ENERGY (MMBTU) ***
COOLING
MONTH A/C DEL SHORT PURCH
YR 3.37 3.37 0.00 1.61

```

Figure 5. Sample annual summary output. (MMBTU is million BTUs.)

ments that account for the actual efficiency of the equipment.

Level 1 output is similar, but doesn't show the component losses or gains. Level 3 output presents the above information for every month of the year. Level 4 shows the wall, window, door and solar values for each individual wall. In addition, graphic outputs (Figure 6) are available. Thus, it is possible to get just about any level of detail you need to understand how the house is using energy or to make a presentation to others.

Output can be directed to the screen only, or to the screen and printer. You can "pause" the output if desired.

F-Load Calculations

F-Load calculates monthly energy use based on the envelope loss or gain, solar heat gains, internal heat gains from appliances, people and lights, foundation losses, and thermal storage.

F-Load has built-in weather data for 329 cities. This data includes average monthly temperatures and degree days (a parameter that represents outdoor temperature in heat loss calculations), solar radiation data, and design day (the temperature extremes used in determining maximum heating and cooling loads for sizing equipment) data. You can add data or modify existing data if you desire.

The F-Load algorithm does a much better job of treating the interaction between overheating, thermostat setback and thermal mass than the popular SLR method. The latter implicitly assumes that the building temperature drops instantly to the low setting when the temperature is set back at night. This would be true only for a zero-mass building, so the SLR algorithm overestimates the energy savings in a heavy mass passive solar building. F-Load calculates the rise in temperature during the day due to solar and internal gains, the time it takes to discharge the mass and cool to the night setting, and the energy required to bring the building up to temperature the next day. It then adjusts the degree days and energy flow appropriately.

Solar gains through windows of all

Introducing the 50 cent spreadsheet...the 50 cent language tutor... the 50 cent action game...



We started with more than 4,000 good programs, written by hundreds of programmers across the U.S., and we got unreasonably picky. Only 1300 met our standards for quality, capability and reliability. They form the Abacus 1000 Software Series, the most incredible software value in personal computing.

The Abacus 1000 includes complete volumes of programs in today's most popular categories. The prices will be popular, too. Business & Finance, 10 diskettes, \$199.95. Games, 9 diskettes, \$149.95. Adventures, 8 diskettes, \$99.95. Family & Home, 11 diskettes,

\$99.95. Graphics & Sound, 11 diskettes, \$99.95. Education, 8 diskettes, \$129.95. Programmer's Tool Kit, 10 diskettes, \$119.95. **Or the complete Abacus 1000 Series...7 volumes, 67 diskettes, 1300 programs...Only \$599.00. That's less than 50 cents a program!**

Imagine less than fifty cents for a versatile home finance manager...an exciting combat action game...a danger-packed fantasy adventure...an eye-opening learning program. The Abacus 1000 Software Series is available C.O.D. or with your Visa or MasterCard by calling **(612) 340-1468**. Or ask your nearest Abacus dealer. You can finally use your Apple, Franklin or Abacus Portable computer for everything it's worth...without spending everything you're worth.



AbacusTM

COMPUSOURCE

510 No. First Ave., Suite 408, Mpls., MN 55403

Value That Computes.

Apple is a trademark of Apple Computers, Inc.
Franklin is a trademark of Franklin Computers, Inc.
Abacus and Abacus 1000 are trademarks of
CompuSource, Inc.

COMMUNICATION PROBLEMS?



PERSON-TO-PERSON™ PROVIDES THE INTEGRATED SOLUTION

Data, voice and mail, PTP 1.1 handles them all.

PTP keeps a single comprehensive phone, address and memo database. With this file, it prints, dials and runs computer communications. Perfect for the home. A productivity tool for business.

- Dials voice calls, can use non-Bell long-distance, send tone-dialed data
- Displays any address in 2 seconds, revise memos during calls
- Print an envelope, filing card, mailing list or merge-print form letters
- Up or download data files or electronic mail
- Auto log-on or prompted auto answering with auto up or downloading
- Alternate voice and data

PTP has interactive prompting and is totally menu-driven. It's convenient, versatile, fast and friendly.

Person-to-Person. The integrated communications database for the Apple II and //e from Trutek Software.™ Only \$69.95.

Ask your dealer for a demo. Or order direct by phone or mail. Credit card orders accepted by phone. By mail send check or money order. Add \$3.00/shipping. California residents add 6% sales tax. Dealer inquiry invited.

Minimal system 48K, 1 disk drive. Optional modem, printer, 16K card, 2nd disk drive, 80 column card, //e features Capacity (64K) about 1400 listings per file. Also suitable for general filing.

*Modems supported: Hayes Micromodem II or IIe, Smartmodem 300 or 1200 (with Apple Super Serial Interface). Novation Apple-Cat II and compatibles of these.

Apple is a registered trademark of Apple Computer. Micromodem II and Smartmodem are registered trademarks of Hayes Microcomputer Products. Apple-Cat II is a trademark of Novation.



1700 Solano, Berkeley, CA 94707
Orders: 800-621-3744 (In CA 415-525-4901)

HEATING

ENVELOPE LOSSES

```
WALLS !*****
WINDOW !*****
DOORS !*****
ROOF !*****
BSMT !*****
INFIL !*****
GARAGE !*****
```

```
!-----!-----!
0          10        20
MMBTU
```

HEATING ENERGY

```
JAN !*****
FEB !*****
MAR !*****
APR !*****
MAY !*****
JUN !*****
JUL !*****
AUG !*****
SEP !*****
OCT !*****
NOV !*****
DEC !*****
```

```
!-----!-----!
0          4.5      9
MMBTU
```

Figure 6. Sample graphic outputs.
(MMBTU is million BTUs.)

consuming solar calculation results are saved in memory.

The economics routine in F-Load is one of the best and most detailed available. A sample output appears in Figure 7. It allows you to calculate the life-cycle cost of owning and operating a passive solar building compared to a conventional building. Of course, any life-cycle analysis is only as good as the crystal ball you use to predict fuel costs and inflation rates into the future.

One important limitation of F-Load is that it does not explicitly model sunspaces. You can estimate the performance of low mass sunspaces (such as greenhouses), if you know what you're doing, by assuming they are part of the direct gain space during the day, and counting the R-value of the wall that separates the sunspace from the house as night insulation.

The User's Manual

The user's manual is excellent. It contains an overview of the program, descriptions of all of the input parameters and the program outputs, a detailed explanation of the algorithms used, and forms to use to prepare input data. In addition, the program has its own help commands. Even without the manual, most engineers and architects who have done energy analysis before should find F-Load easy to use.

System Requirements

F-Load requires an Apple, Apple II, or Apple IIe with 64K and at least one disk drive. The program is written in Basic and is not copy protected. It is available at a cost of \$425 from F-Chart Software, 4406 Fox Bluff Road, Middleton, WI 53762.

Summary

If you need to predict the energy requirements of residential (and small commercial) buildings, F-Load is a good choice. The input/editing routine is easy to use. The variable output makes it possible to assemble reports to meet a variety of needs. The program handles thermostat setbacks well and its ability to do cooling calculations is valuable. The only major limitation is its inability to handle sunspaces. ■

*** ECONOMICS	
FIRST YEAR UTILITY COSTS	
HOT WATER ELECTRICITY	\$ 343
ELECTRIC UTILITIES	\$ 320
HEATING NATURAL GAS	\$ 194
COOLING ELECTRICITY	\$ 19
TOTAL UTILITIES	\$ 876
LIFE CYCLE COSTS	
HOT WATER ELECTRICITY	\$ 7600
ELECTRIC UTILITIES	\$ 7094
HEATING NATURAL GAS	\$ 4311
COOLING ELECTRICITY	\$ 419
EQUIPMENT	\$ 0
TOTAL	\$ 19424
BREAKDOWN OF EQUIPMENT COSTS	
EXPENSES	CREDITS
DOWN \$ 0	INTEREST \$ 0
MORTGAGE \$ 0	DEPREC \$ 0
MA & INS \$ 0	RESALE \$ 0
PROP TAX \$ 0	TAX CRED \$ 0

Figure 7. Sample economics output.

orientation are counted in the basic energy balance. Energy that can't be used is shown in the output as EXCESS. Large values of EXCESS in the winter months indicate that the building may have too much glazing or that there is not enough mass. This is very helpful information when you are designing a passive solar building.

F-Load requires about 10 minutes for a typical run with both heating and cooling calculations. Subsequent runs on the same building require about half that amount of time, since time-



Locksmith 5.0™ . . . Before It's Too Late.

If something can go wrong, it will. At the worst possible moment.

That's why you can count on a vital disk failing just when you need it most. Maybe it simply wore out . . . or was damaged by static electricity . . . or spilled cola rendered the disk unusable. Without a backup copy, you'll quickly find yourself at the end of your rope.

Fortunately, there is the new, state-of-the-art **Locksmith 5.0**.

Two years of research went into this updated version of the undisputed leader in software backup programs.

The new **Locksmith 5.0** deciphers the latest, most sophisticated copy protection devices. So you can make backups of virtually **all** Apple-compatible programs*—more than any other nibble copier now available.

And, with the **Locksmith 5.0**, backups will be **easy** to make. It offers you a new, highly detailed owner's manual that clearly takes you step-by-step through each operation.

The cost? **Locksmith 5.0** retails for just \$99.95. And the deal is even sweeter if you own an earlier Locksmith version. Locksmith 4.X owners can upgrade for only \$24.95—3.X owners for only \$39.95 (direct from Omega).

When your disks fail, don't be left hanging. Back them up with **Locksmith 5.0**. It's available from your nearest dealer **now**. If he's out of stock, order direct from Omega MicroWare, Inc. by calling toll free:

1-800-835-2246

(Kansas residents call 1-800-362-2421). Or simply send \$99.95 plus \$3.50 for shipping and handling charges to OMEGA MICROWARE INC.

Apple IIe-compatible!



OMEGA MICROWARE, INC.

222 S. RIVERSIDE PLAZA CHICAGO, IL 60606
(312) 648-4844

*Note: Locksmith 5.0 copies **everything** from your original program, including all copyright notices and serial numbers.
Locksmith is a trademark of Omega MicroWare, Inc.
Apple Computer is a registered trademark of Apple Computer, Inc.
© Omega MicroWare, Inc. 1983

The **SIR-TECH** Standard:

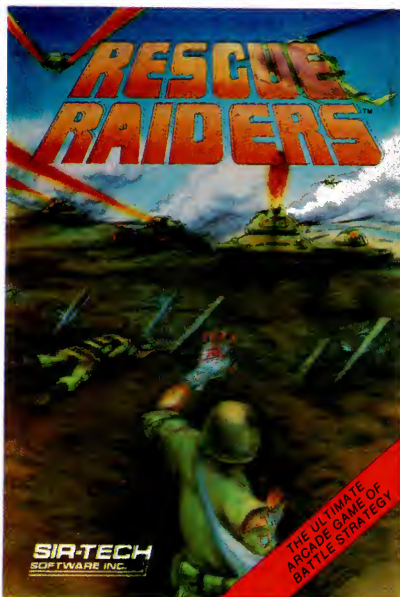
**SOFTWARE THAT CHALLENGES,
INTRIGUES, AND ENTERTAINS...**

As you search for freedom, you will test your courage and challenge your problem solving ingenuity.



ALL SOFTWARE AVAILABLE
FOR THE APPLE AT YOUR
FAVORITE RETAILER.

A lesson in the balance of power.



Modern weapons have been transported back in time to World War II and both sides have mind-boggling capabilities. There is no guaranteed winner this time around.

From a command chopper, you must coordinate your ground forces against a force as complex and strong as yours. You must mastermind a strategy with infantry, tanks, bunkers, bases, balloon mines and much more!

The fate of the world is in your hands as you struggle to liberate the European continent, and save the free world! Learn to develop your survival instincts and win over an equal enemy because right is on your side!

This terror filled adventure game begins on a dark, stormy night. You find refuge in the only available shelter-- an eerie mausoleum. Suddenly you are trapped in MEDEA's forbidden tomb.

All the dangers and horrors you ever imagined await you in the hidden passages and secret rooms of MEDEA's crypt. You strain your intellect and match wits with MEDEA's ghoulish obstacles and secrets of the deep passages. You may escape with your life... or face eternal entombment in the CRYPT OF MEDEA.

SIR-TECH

SOFTWARE INC.

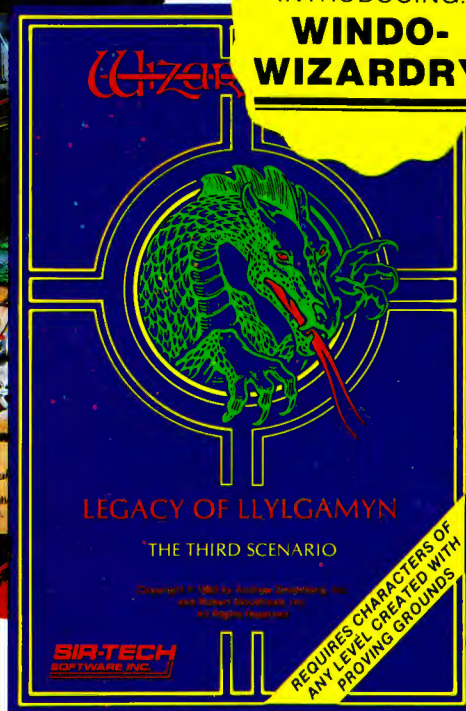
COMMITTED TO EXCELLENCE:

OUR COMMITMENT IS YOUR GUARANTEE OF SOFTWARE THAT CHALLENGES, ENTERTAINS, AND INTRIGUES!

*The WIZARDRY Phenomenon
Continues!*



INTRODUCING:
**WINDO-
WIZARDRY™**



Now, better than ever, the Wizardry adventure continues with LEGACY OF LLYLGAMYN. Cast spells, work your way through a 3-D maze and enjoy the thrill of Wizardry with our newest software innovation--WINDO-WIZARDRY™. Its Lisa-like windows help you play faster and more efficiently than ever before! All the information you'll ever need is at your fingertips' command. SOFTALK's Review Editor, Roe Adams, calls LOL "...an excellent game! It's a landmark in graphics advancement." LEGACY OF LLYLGAMYN is a new world of excitement!

"The Best Yet!"

Margot Comstock Tommervik,
Editor, SOFTALK

SIR-TECH SOFTWARE INC.

Tackling the Building Environment

The first step in reducing energy costs and dependence on non-renewable energy sources should be lowering energy consumption. Here's how one man and his Apple are enabling businesses and homeowners to do just that.

by Nancy White Kelly and Carol M. Clerke



Carl Rutherford (on the right), an EMS consultant, gives a "hands on" demonstration of EMS programming.

Plunging Energy Bills Ahead! Now, that's a headline we'd all like to read. Thanks to the Apple computer and computerized energy management technology, lower utility bills are becoming reality.

A few years ago, Carl Rutherford, an energy management consultant, saw the "handwriting on the wall." Though Carl was a mechanical engineer at the time, he welcomed an invitation from Honeywell to study environmental control in Minneapolis. Carl was immediately introduced to the Apple computer, which was used for his training and for many in-house functions at Honeywell. Soon he was using the Apple for designing energy management systems.

Carl came home to Georgia a convinced man. With the aid of his Apple, he was ready to tackle the energy crisis. He began demonstrating to business owners how energy costs could be substantially lowered.

Business managers were eager to hear some encouraging news, as energy costs have risen for them at a far greater rate than for homeowners. In contrast to private homes, industries can be penalized for an entire month for one hour of peak energy use. In states with a "ratchet clause," a summer peak demand could

Dr. Nancy White Kelly is a free-lance educational consultant and president of Evalu-Ware, a software brokerage firm. Carol Clerke is a middle school teacher in Georgia's Dekalb County school system. Correspondence should be addressed to Dr. Kelly at 72 Valley Hill Road, Stockbridge, GA 30281.

KEYBORED?

How about a musical interlude? With Simply Music™ you can learn, compose, perform, even teach music right in the privacy of your own Apple.

Bye, bye, keyboardom! From \$995



Simply Music, the microcomputer based synthesizer software and hardware system. For the name of your nearest dealer call (800) 227-1817 Ext. 65. Syntauri Corporation, 4962 El Camino Real, Suite 112, Los Altos, California 94022.



Circle 297 on Reader Service card.

Apple is a registered trademark of Apple Computer Incorporated. Simply Music is a registered trademark of Syntauri Corporation.

affect billing for the next six to twelve months.

The Energy Management System

At the heart of Carl's energy management program is a software package developed by Honeywell's Senior Application Specialist, Porter Higby. This sophisticated software is called RAMP, which stands for Remote Access Monitoring System. RAMP is configured for an Apple with two disk drives. It also needs a printer, an 80-column card, a modem and a clock card.

Once a business expresses interest in establishing an energy management system (EMS), Carl evaluates the need and installs the necessary on-site components. These generally include controllers for specific energy-consuming units such as air conditioners and lighting systems. Carl then ties these controllers into a programmable unit monitor that gives a reading of the building's power consumption. The monitor signals the controllers to switch load components on or off, according to programmed instructions. This prevents energy consumption from peaking beyond a set point that would result in costly utility bills for months to come.

In earlier days environmental control was maintained through mechanical relays or timers. Today, it is done with digital signals traveling over existing AC electrical wires from the central programming unit to the microprocessor controls.

Monitoring

Once the EMS is installed, Carl returns to his Georgia office and uses his Apple and RAMP for monitoring. Utilizing the Hayes Micromodem and normal phone lines, the computer automatically polls every system Carl has installed. This is done at 4:00 a.m. daily, and a printout is ready when Carl gets to the office.

These early morning reports consist of a one-page summary of energy usage and temperature at each site, along with a comparison with the same day in the four preceding weeks. If the report indicates an unexpected rate of energy consumption, Carl accesses the detailed history of energy use

at the individual site from the "Host Historical Data" stored on disk.

The data management capabilities of RAMP provide history files that can be displayed or printed. Hourly data for the last day polled is stored until the site is polled again. Daily reports are stored for up to a year, while monthly summaries are stored for ten years. The data disk also includes a copy of the control program for each site.

"One good thing about these morning reports," Carl emphasizes, "is that they provide an early warning of system failure. Most problems can be corrected immediately by modifications of the site control program using the Apple as a communications terminal." A hardware problem, such as a failure of the back-up relay, would be logged and corrected before it could cause a total system failure. Secondly, the records enable the customer to calculate energy savings resulting from the EMS.

Carl is quick to add that the installation of an energy management system is not a "set it and forget it" proposition. It takes about a year of "fine tuning" to achieve optimum savings with an EMS. Also, if equipment is added, if occupancy changes, or if building use plans are altered, then the EMS program must be modified.

In addition to using VisiPlot and VisiTrend to plot the "Host Historical Data," Carl uses VisiCalc to develop his energy "What if..." program. A customer can visualize what will happen to energy costs if he or she creates a new wing, installs insulation or replaces a furnace.

Priorities

Carl takes many factors into account when he installs an energy management system. In a hotel, for example, guest comfort is accorded first priority. "You've got to look for the nonessential load-consuming devices that are not going to affect the environment drastically," says Carl. "For example," he explains, "extra lighting and fans can be shut down at times of peak energy demand. However, you must be careful not to be so aggressive in energy management that you sacrifice environmental comfort. It's really a fine line."

Carl also believes it is imperative

that nothing be done that would slow down a customer's production. To do so would be "throwing the baby out with the bath." For example, you can't "duty cycle" or routinely shut down an ice cream store's freezers or cut off hot water heaters in a laundromat. Though energy control is necessary to reduce utility costs and increase profits, businesses must still be able to function normally.

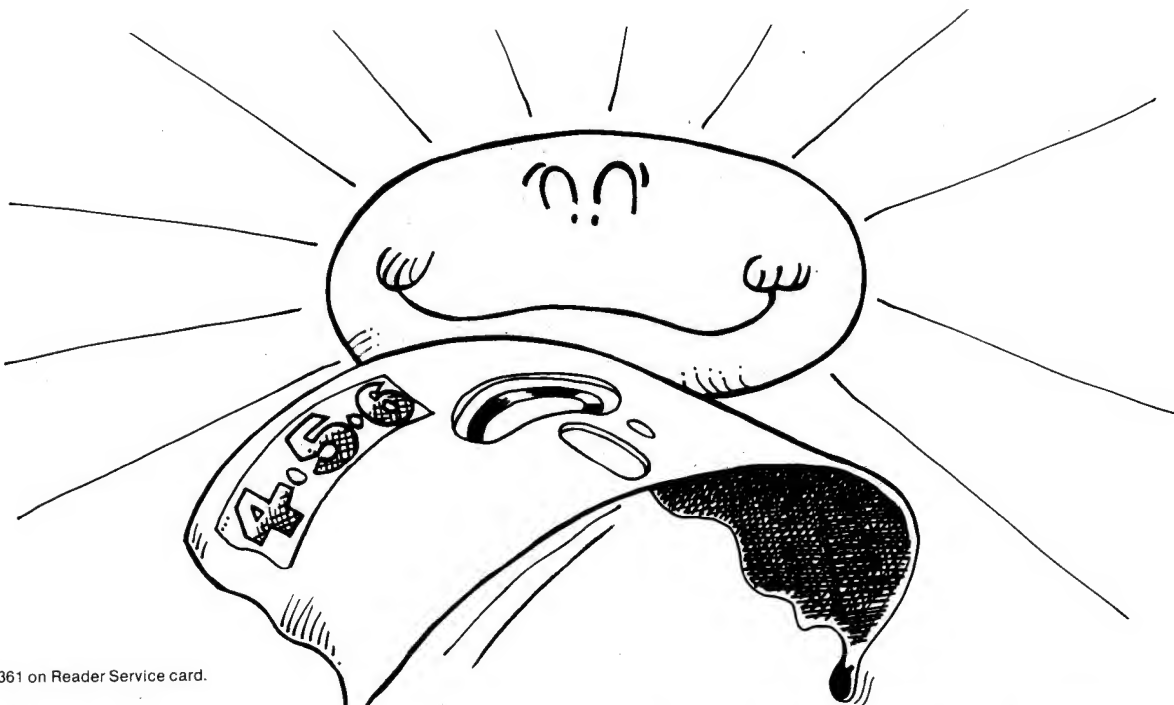
The Savings

What potential savings does an EMS offer? It depends largely on the type of industry or business involved. Because it cannot shut off lights and deep fryers at peak energy times, the pay-back time for a fast food facility could be as long as two years. Hotels, however, are able to take greater advantage of an EMS, and often have a pay-back time of six months. Thereafter, an EMS can save from six to 50 percent of energy costs.

Carl has many success stories. One is the new 602-room Brickell Point Holiday Inn in Miami, Florida. The hotel is cooled by two 260-ton chillers, seven air handlers, and 11 roof units. Florida Power & Light projected a peak demand of 1,750 kw, which Carl felt was extremely high. After installing a comprehensive energy management system, the hotel owners saw results. During the first two months of operation, the hotel's energy demand never exceeded 998 kw. Brickell Point Holiday Inn became the first hotel system in Dade County to meet Florida's energy code. Good news travels fast. Carl was recently asked to install a similar energy management system in the new Airport Regency Hotel, also located in Miami.

Presently only about six percent of existing structures have energy management systems. Though some such systems are being used in homes, initial costs are still too high to be practical for most homeowners. However, Carl believes the day will come when all residential and commercial establishments will have some form of computerized energy management.

Write Carl Rutherford at Energy Conservation Controls Inc., 3970 Thurmond Road, PO Box 808, Conley, GA 30027. ■



Circle 361 on Reader Service card.

What if . . . your software gets too soft?

You need software insurance.

Diskettes are fragile, and when a protected program is damaged, the results are expensive and inconvenient. If you have a backup diskette, though, you can have your Apple, IBM or compatible computer back on line within minutes . . . affordably. That's software insurance.

Copy II Plus

This is the most widely used backup program for the Apple. Rated as "one of the best software buys of the year" by InCider magazine, its simple menu puts nearly every disk command at your fingertips. The manual, with more than 70 pages, describes protection schemes, and our Backup Book™ lists simple instructions for backing up over 300 popular programs. The Backup Book is expanded bimonthly, and is always available to Copy II Plus owners for only \$1.00 (and a self-addressed, stamped envelope). Best of all, Copy II Plus is still only \$39.95.

WildCard 2 (formerly The Alaska Card)

Designed by us and produced by Eastside Software, WildCard 2 is the easiest-to-use, most reliable card available. Making backups of your total load software is as easy as pressing the button, inserting a blank disk and hitting the return key twice. WildCard 2 copies 48K, 64K and 128K software, and, unlike other cards, is always ready to go. No preloading software into the card or special, preformatted diskettes are required. Your backups can be run with or without the card in place and can be transferred to hard disks. \$139.95. complete.

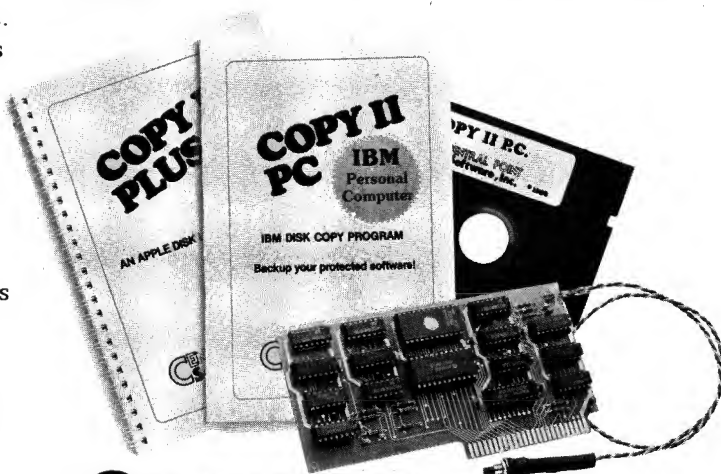
Important Notice: These products are provided for the purpose of enabling you to make archival copies only. Under the Copyright Law, you, as the owner of a computer program, are entitled to make a new copy for archival purposes only, and these products will enable you to do so.

These products are supplied for no other purpose and you are not permitted to utilize them for any other use, other than that specified.

Copy II PC

This is the only disk backup program for the IBM PC, PC/XT and PCjr that copies almost anything. Others may make similar claims, but in reality, nothing out performs Copy II PC . . . at any price. Copy II PC even includes a disk speed check and is another "best buy" at only \$39.95.


We are the backup professionals. Instead of diluting our efforts in creating a wide variety of programs, we specialize in offering the very best in backup products. So, protect your software investment, **before** things get too hot.



CENTRAL POINT
Software, Inc.

The Backup Professionals

To order, call 503/244-5782, 8:00-5:30 Mon.-Sat., or send your order to: Central Point Software, 9700 SW Capitol Hwy, Suite 100, Portland, OR 97219. Please include \$2.00 for shipping and handling.



TALK TO ME. Now your computer can tell you the words you've always wanted to hear. Go ahead. Plug in a Mockingboard and feed your computer some lines. Sweet Micro Systems, Cranston, RI 02910. (800) 341-8001.

Mockingboard speech is easy to understand, unlimited in vocabulary and uses very little memory. No wonder over 40 leading software companies will soon be talking to you on Mockingboard. And you thought it was just for music and sound effects.



MOCKINGBOARD™

Circle 222 on Reader Service card

The Alternative Apple

Taking your Apple canoeing may seem like a wild idea. But with a battery and an inverter you could do it.

by John Davidson

No discussion of computers and alternative energy would be complete without considering the idea of running the computer itself from an alternative energy source. With the small power consumption and low voltages required by modern microcomputers such as the Apple, battery operation is completely practical.

Two places where battery operation would be desirable come immediately to mind: in homes without regular electric service, and for portable use, as in a vehicle or during some kinds of field work such as surveying.

A third possible use for battery operation might be for long critical file handling operations in areas where the commercial power is unreliable, although power from the grid is available most of the time and can be used to maintain a storage battery.

A fourth suggestion is to run the computer on alternative power to free it from the power grid and save on the electric bill, but I doubt that I'd bother; my last calculation showed a payback of just over 104.7 years. Of course, if the electric rates increase enough, that might drop to as little as 75 or 80 years!

There are many ways of providing power without the help of the local utility—windmill, solar, water wheel,

thermopile, a human (or animal) powered generator, and so forth. The problem with most of these is that they may not be reliable from hour to hour or day to day. Thus you need intermediate storage. The obvious choice would be a 12-volt automobile or motorcycle battery. Sounds easy.

Battery Storage

Actually, the question of batteries rates more than just a cursory glance. Once upon a time a storage battery was a storage battery. No more. In the modern age of super-specialization and ultra-engineering, the "ordinary" automobile storage battery is optimized for just one "worst case" task: getting the car started on a really frosty northern morning.

The marine/recreational vehicle (deep cycle) storage battery, on the other hand, is designed to accommodate moderate loads for long periods, while doing poorly with high amperage engine starting currents. Thus, the

John Davidson is a physicist and professional engineer with a penchant for writing. He has been involved with microcomputers since 1975, including designing his own systems. He has also been an editorial adviser for this feature issue of inCider. You can write him in Marlow, NH 03456.





©1981 A. L. Linn

BLACKJACKPRO

Circle 131 on Reader Service card.



This is not a game

This is a computer aided learning tool that will pay for itself.

BLACKJACKPRO's 16 programs will condition you to make the right play automatically.

This is a practical approach to mastering the probability based system that experts have been winning with for years.

You'll receive a guidebook to the complete winning strategy. The nine chapters will examine each of the strategies which are guaranteed to

turn the odds in your favor.

Then the computer aided exercises will patiently correct your mistakes and train you to handle any game situation until you are ready to face the casinos and start winning.

With BLACKJACKPRO you'll become a lifelong winner.

Why wait? Simply check your computer on the attached coupon, or call 1-800-223-6015.

Versions are now available for all major hardware.

Phone orders may be placed 24 hours a day by calling (212) 582-2006 or (613) 594-7855, or toll-free at: 1-800-223-6015.

Mail Orders and Requests for information should be sent to:

SKILLWARE CORPORATION

Applied Probability Dept.,
2nd Floor, 314 West 53rd. Street New York, New York 10019

BLACKJACKPRO is a trademark of: SKILLWARE CORPORATION.
APPLE II, ATARI, COMMODORE, IBM, and TRS-80 Color Computer, are trademarks of Apple Computer Inc., Atari Inc., Commodore Electronics Ltd., International Business Machines, and Tandy Corp.

Please send me ☐ One, ☐ _____
BLACKJACKPRO tutorials
@ \$49^{US} (\$60^{CDN}) each.
For: ☐ APPLE II ☐ IBM P.C.
☐ ATARI 400/800/1200
COMMODORE ☐ 64 ☐ Vic 20
☐ TRS-80 Color Computer
With: ☐ Diskette ☐ Cassettes

Total Amount Enclosed \$ _____

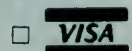
N.Y. State Residents please add Sales Tax. Please allow Two Weeks for personal checks to clear.

Name: _____

Address: _____

City: _____

State: _____ Zip: _____



Acct# _____

Expiry Date _____/_____/_____

Signature: _____

SKILLWARE CORPORATION

deep cycle battery is the hands-down choice for running a computer (a low to moderate load) for a relatively long time.

There is one qualification to this, and it involves cost effectiveness. Automobile storage batteries are often replaced at the first hint of a problem, and though many of these batteries still have life in them, they are generally junked. You can often pick up one or two at a friendly gas station for the junk price, and my experience at rehabilitation with a low (2 to 4 amp) charging rate has been generally good.

If you don't mind lugging batteries around and you can coddle the battery through a few cycles of useful work, you are ahead. If the junk battery price goes up while you are using it, you may even make a modest profit.

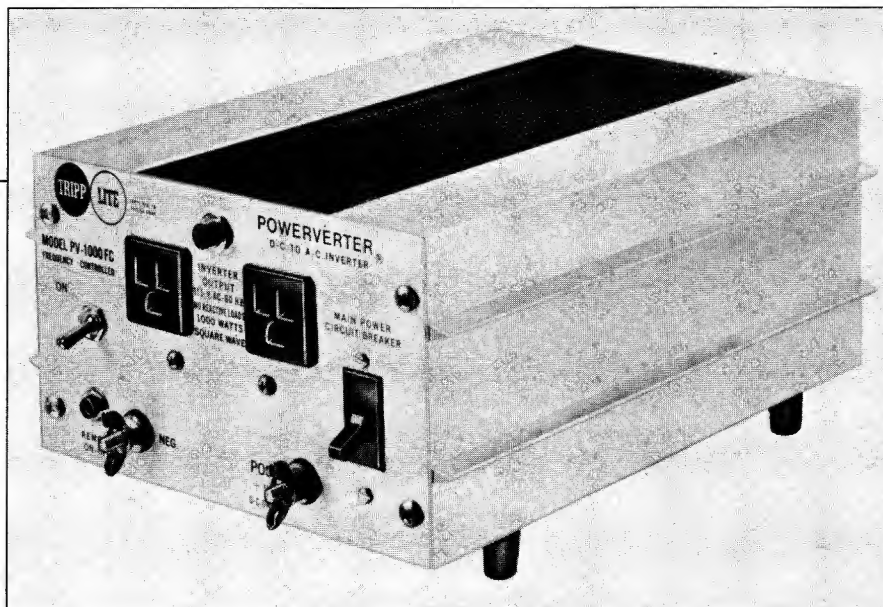
Two Power Alternatives

You now have a choice of two viable methods for powering the computer from the 12-volt battery: use a solid-state inverter to create 117-volt AC for the Apple and its peripherals without further ado; or arrange the electronics to provide the required DC voltages directly, bypassing the 117-volt power supplies. The first approach is quick and easy—you needn't even remove the top of the computer. The second approach is a bit cheaper, lighter in weight, and will yield more computing time from equivalently charged batteries (or reduce the charging requirements for comparable operating times), but it requires considerable hardware hacking. So, let's look at the first approach.

The Inverter

All you really need is a store-bought gadget, the direct current to 117-volt alternating current inverter. These all use a storage battery, usually 12 volts in this current range, and come in three "flavors" with commensurate prices. Top-of-the-line is the *uninterruptable power supply* (UPS). The UPS plugs into the wall and maintains its storage battery on charge automatically (full or trickle, as necessary) as long as the AC mains (utility) power is available. Meanwhile, the computer is running on mains power.

On failure of the mains, the UPS



switches to its battery automatically in less time than it takes to tell, the computer doesn't know the difference, and the battery continues the operation for a specified time depending on battery size and load. When power returns, the computer (still oblivious) is switched back, and the battery is simultaneously recharged. It's a good system—the UPS really delivers. It is expensive, but the price generally includes a good, high-tech battery.

Not quite as posh, but certainly serviceable, is the combination inverter and battery charger. Its operation is similar to that above, but you do the switching. Unless you have reflexes like lightning (or perhaps a bit faster), the computer will see the glitch when the mains power fails and go down, but, after you light your candle, you're back in business.

The last approach, the simple inverter, merely provides alternating current from the battery. You defend yourself on keeping the battery

charged. (If you don't have mains power available most of the time, the battery charging feature of the first two devices mentioned will be wasted anyway.) I'm going to address this last device, although most of the discussion is applicable to all.

Are Frequency and Wave Shape Important?

There are two issues you'll see raised in connection with solid-state inverters: frequency control and wave shape. For most computer equipment a stable frequency is not necessary, *unless the AC is driving a motor whose rotational speed is critical*. Common examples of AC-driven speed-critical motors are those in most 8-inch disk drives and model 35 and earlier Teletype printers. Of course, frequency controlled inverters are available at a premium.

Many low-cost inverters produce a square wave, not the sine wave furnished by the power company. This

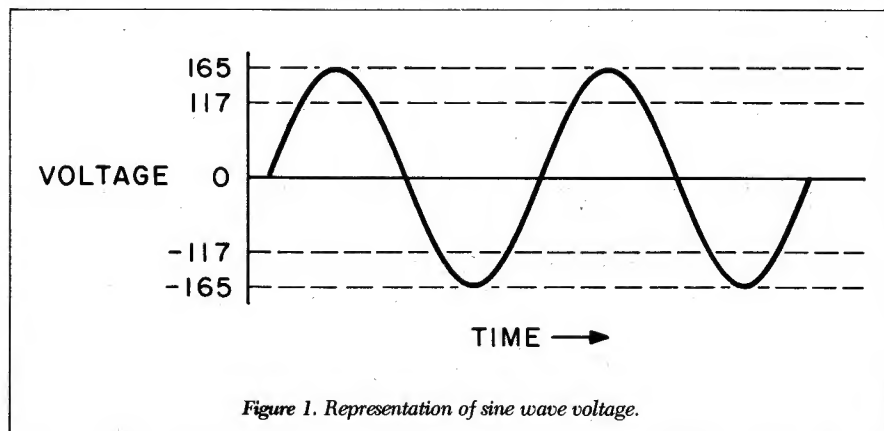
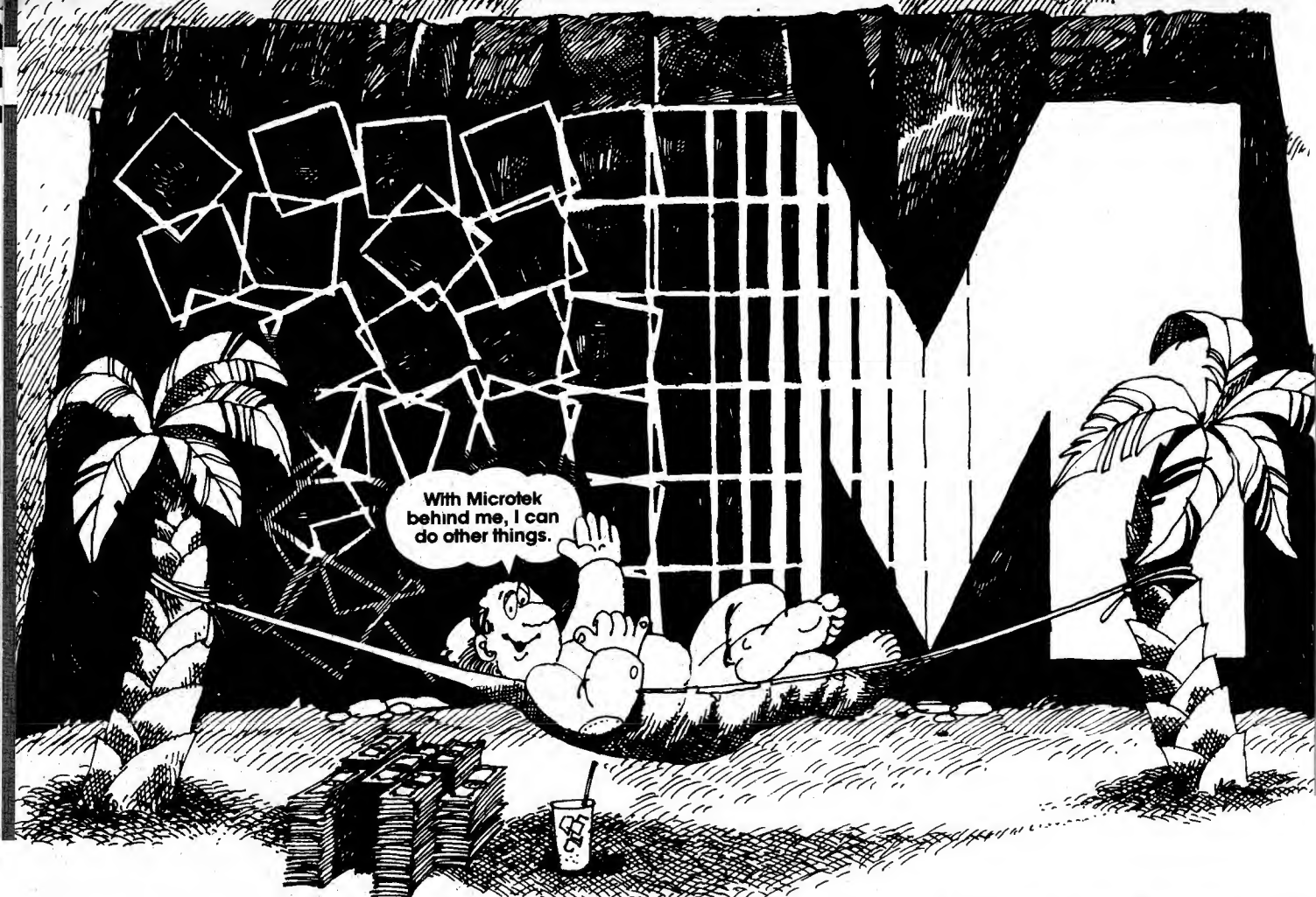


Figure 1. Representation of sine wave voltage.



LET MICROTEK'S "SILENT SALES FORCE" PACKAGE DO THE WORK FOR YOU.

INTRODUCING MICROTEK'S "SILENT SALES FORCE." WE'LL MAKE OUR PRODUCTS WALK OFF YOUR SHELF BY THEMSELVES.

Microtek, the world's leader in 'SLOTWARE' manufacturing has done it again.

Now we've made it easier for you and your sales people with our new (and we feel, very innovative) "Silent Sales Force" package.

The package consists of a variety of items designed to move products off your shelves without the lengthy sales pitches that it sometimes takes to make (or not make) that critical sale.

HOW IT WORKS:

Microtek's "Silent Sales Force" package is made up of the following full-color items:

A) A beautiful wall poster that very simply depicts what each product will do for the Apple, Apple IIe, Franklin, etc. computer in terms of expanding its capabilities.

B) A full-color booklet that you can give away which explains, in very simple terms, the many enhancements possible for the Apple II computer.

C) A series of attractive full-color pamphlets (one for each product line) that explains in

a little more detail, how that specific product line can expand their computer's capability. **D)** An attractive counter-top P.O.P. Display.

OUR "SILENT SALES FORCE" WILL DO THE WORK, SO YOU CAN DO OTHER THINGS.

We sincerely feel that all you're going to have to do is ring up the sale. Our "Silent Sales Force" package will do the selling. This will leave you and your sales people free to pursue your other in-store sales activities.

WHY WE CAME UP WITH THE "SILENT SALES FORCE" IDEA.

At Microtek, we have a continuing concern over certain areas, like exactly what it takes to move product. In our research we have found that many potential customers who visit a computer retail store, are completely unfamiliar with how powerful a machine the Apple II can be!

MICROTEK'S "SILENT SALES FORCE" PACKAGE IS EDUCATIONAL IN LAYMAN'S TERMS AND A GREAT CLOSER.

With Microtek's "Silent Sales Force" working for you, it'll make closing the sale on 'Slotware' products as easy as falling out of a hammock.

Our combination of wall poster, attractive booklet, series of full-color pamphlets and P.O.P. display will do all the work for you. You just take the money.

SERVICE:

Microtek is one of the leaders in service with TOLL FREE service lines and a 2-year warranty on products.

After you sell a Microtek product, you can forget it and get on with your job of selling.

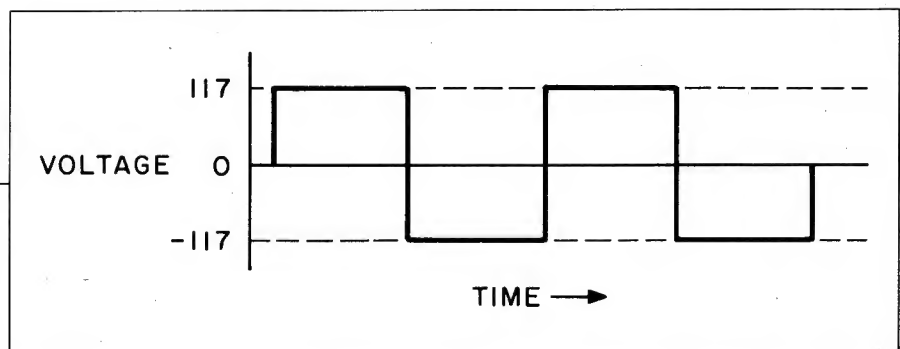
Microtek's "Silent Sales Force" package.

The only real work you'll have to do is go back and forth to the bank.



4750 Viewridge Avenue, San Diego, CA 92123
(619) 569-0900/TX: 910-335-1269

Figure 2.
Representation of square wave voltage.



has two main implications (aside from changing the mathematics of analysis). First, the actual voltage does not change during a half cycle the way sine wave AC does. Thus, SCRs, Triacs, and other devices that trigger on a certain voltage level will be befuddled, and light dimmers or motor speed controls based on these devices will not work properly.

The second difference is that the peak voltage will be lower. A reasonable response to this statement would be, "Huh! 117 volts is 117 volts, isn't it?!" Not quite. Take a look at Figures 1 and 2. When an electrician (or your friendly utility) speaks of alternating current voltages, he's talking *root mean square*, or RMS, but the voltage is actually higher (by a factor of the square root of two, or 1.4142) than the stated value for a brief instant twice during each cycle.

The magic of the RMS nomenclature and the $\sqrt{2}$ factor is that an RMS voltage has the same heating (or lighting) value (power) as the equivalent voltage of direct current. Think of it as the part above the actual RMS voltage "filling in" the lower voltage areas between the RMS and the zero crossing. (The squaring is done to avoid the mathematical problem of the true average voltage of one cycle of AC being zero.)

Because the square wave does not reach as high a peak value, a lightly loaded, unregulated power supply (where a filter capacitor is charged by the AC peak) may not develop quite as high an output voltage with the square wave as it would with a sine wave. Computer power supplies are always regulated and usually can accommodate this drop if it occurs.

How Much Power Do You Really Need?

Your first consideration in choosing an inverter is determining your actual power requirement. The rules of the Underwriters Laboratories make this a simple task. List all the equipment you want to work with your battery-powered computer system. Now, note the items that normally plug into the wall. (Apple disk drives derive their power from the Apple, not the wall, thus would not be counted.)

Inspect the UL-required specification markings on each of these wall-plug devices and note the power requirement, usually in watts, but occasionally in amperes. Add the wattage

figures. (Convert amps at 117 volts AC to watts by multiplying by 117 before adding.)

This, then, is your actual wattage requirement in the here and now. Fu-

Circle 11 on Reader Service card.

**"We will match
any mail order
price in
this issue."**

We'll support, service and warranty everything we sell and stand behind it 100%. We won't charge you for shipping or handling, nor will we penalize you for using a credit card.

William F. Gollan
President, BCP

COMPUTERS				HARD DISKS			
Franklin		Ace 1000 Pro +	\$1499.95	Corvus		20mb	\$2939.95
Ace 1000	\$ 789.95	Ace 1200	1399.95	6mb	\$1599.95	Mirror	599.95
Ace 1000 Family	1099.95	Ace 1200 OMS	1709.95	11mb	2199.95		
Ace 1000 Pro	1199.95	Apple IIe	call				
MONITORS				PRINTERS DOT MATRIX			
Amdek		USI		C. ITOH 8510	\$ 379.95	NEC PC 8023 A	\$419.95
Color I +	\$299.95	Pi 2 12" G	\$149.95	C. ITOH 1550	665.95	Okidata 82A	309.95
Color II +	439.95	Pi 3 12" A	159.95	Epson RX 80	299.95	Okidata 83A	559.95
Color III	349.95	Pi 4 9" A	145.95	Epson FX 80	539.95	Okidata 84	959.95
MODEMS				Epson FX 100	689.95	Okidata 92	439.95
DC Hayes		Novation		Gemini STX 80	179.95	Okidata 93	699.95
Smartmodem 300	\$219.95	Apple Cat II	\$279.95	Gemini 10x	299.95	Tally MT 160L	619.95
Smartmodem 1200	499.95	Smartcat 1200	419.95	Gemini 15	389.95	Tally MT 180L	809.95
Micromodem IIe w/s	269.95	Prometheus Pro 1200	389.95	Gemini 15x	409.95	Tally Spirit	319.95
Micromodem II w/s	299.95			Gemini Delta 10	509.95	Transtar 315 Color	469.95
				IDS Prism 132 Full	1549.95		
PERIPHERAL CARDS				LETTER QUALITY PRINTERS			
ALS		Titan (Saturn)		C. ITOH F10 40	\$1129.95	Diablo 820	\$999.95
CP/M 2.2	\$124.95	64k Ram	\$264.95	C. ITOH F10 55	1429.95	NEC 2030	\$809.95
CP/M 3.0 Rev B.1	289.95	128k Ram	354.95	Dynax DX 15	449.95	Silver Reed 500	419.95
East Side		Accellorator II	429.95	Daisywrite 2000 48k	999.95	Silver Reed 550	619.95
Wildcard	109.95	Neptune 64k + 80	199.95				
Wildcard +	139.95	Neptune 128k + 80	299.95				
Gibson Light Pen	244.95	Neptune 192k + 80	379.95				
Koala Graphic Pad	94.95	Synetix					
Microsoft		Flashcard 147kb	299.95				
Z80 Softcard	229.95	Flashcard 294kb	439.95				
Premium II +	459.95	Videx					
Premium IIe	344.95	Videoterm w/ss	229.95				
Quadram eRam	119.95	Ultraterm	279.95				
Titan (Saturn)		Enhancer II	109.95				
32k Ram	174.95	PSIO card	179.95				
FLOPPY DRIVES							
Rana		Micro Sci					
Elite 1 163kb	\$279.95	A2 143kb	\$249.95				
Elite 2 326kb	429.95	A40 164kb	289.95				
Elite 3 652kb	539.95	A70 286kb	349.95				



BUSINESS COMPUTERS
OF PETERBOROUGH

**FREE
SHIPPING**



12 School Street • Peterborough, NH 03458

**ORDERS ONLY:
800-845-3003**

**QUESTIONS:
603-924-9476**

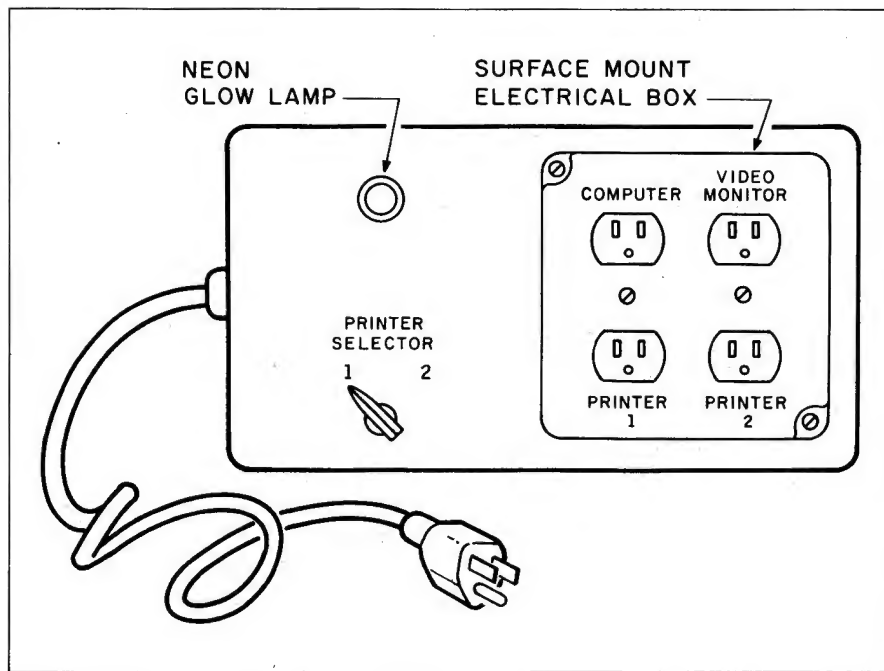


Figure 3.
Sample line filter with multiple-outlet box and selector switch. Modify for your own needs.

ture expansion? Check the labels on other equipment at your dealer's if you expect to add it during the life of your inverter or your system. Of course, you only need consider equipment that will be operating simultaneously.

For example, I have three different printers. My system won't drive more than one at a time without tricks, so there's no need to have more than one turned on at a time. I use the highest of the three printer consumption figures. (Then, of course, I must make sure only one is turned on at a time.) Add 10 to 20 percent "for good measure" and a margin of safety, and go with the lowest-power 117-volt inverter that matches or exceeds that wattage. (Overgunning will do no harm, but it increases cost and weight.)

Power Protection

According to the inverter manufacturers, that's all there is to it; add a grounding multiple-outlet adaptor from your friendly neighborhood hardware store, and you're on your way. Of course, in their next breaths (in the fine print) they disclaim all responsibility for any problem. Being a cautious soul, I'd like to see a bit of protection between the inverter and the computing equipment, and the filter described in "Line Cleaner—A Construction Project" in the August 1983 *inCider* (pages 108–110) is just the ticket.

Please note that an error occurred in the schematic diagram with that article. A correction was published in the September 1983 *inCider* (page 10), but

I'll repeat it here. The schematic showed a two-wire cable and outlet to feed the computer and did not carry the ground beyond the rfi filter module. The computer cable should have been shown as three-wire, with the ground (green wire) connected to the other ground wires and the hot (black) and neutral (white) wires going straight through the filter.

There are three small modifications to the line cleaner project I'd like to suggest for this use: I'd mount several outlets in the face of the box rather than coming out on a cord and single outlet; I'd substitute a 117-volt neon lamp for the LED for a slightly lower power consumption; and I'd use a metal box for better shielding and protection. Standard electrical boxes are available in a wide variety of sizes and shapes at your local electrical supply outlet.

Also, if your system does include several different components that will be used at different times (like my printers) you might consider a selector switch that will power any one of the outlets that these devices will use. Then, even in the face of absent-mindedness, you *can't* power up more than one at a time.

This switch must, of course, be rated for 117-volt service and should switch only the hot (black) wire. Neutral (the white wire) and ground (the green wire) should never be switched. These code colors apply to 117-volt AC household wiring only. Once you get past the AC power supply in any piece of electronic equipment, it's a brand

new ball game with completely different (and often arbitrary) color codes.

When working on this project, remember that 117-volt AC bites (if power is applied) and it can start fires, whether it comes from a wall plug or an inverter. Be sure to separate and insulate all conductors, and see that all wires are firmly attached, by screws, by crimping, or by soldering.

A sketch of one version of this box is shown in Figure 3. The outlets can be mounted in holes cut in the front panel using either the "drill and file" technique or an Adel nibbling tool. An easier way would be to bolt one or more surface mount outlet boxes to the front panel, bringing the wires through large holes behind knockouts in the backs of the boxes.

Use a smooth electrical fitting or a rubber grommet to protect the wires from the sharp metal edges, and be sure to use strain relief on the power cord where it enters the box. You could fuse or breaker-protect this box, but as inverters are current-limiting by nature (when overloaded, the output drops) it doesn't seem necessary.

Further Illumination

When computing, you may need a close, bright light, either to read data or to keep track of manuals and references. You *can* use the battery for that also, but if so, give it some thought. Regular 117-volt lamps devour energy (and give off heat) like mad.

If you must have electric light, look into 12-volt lighting; it's available for boats and recreational vehicles. Also, don't forget the high-intensity lights such as the Tensor that were a rage several years ago. Most of these use a 12-volt lamp and only need the transformer removed. Either way, watch the wattage. Of course, then there's the nice contrast of the solid-state, high technology of your Apple basking in the gentle glow of a kerosene lamp.

How Long Will It Run Between Charges?

The operating time you will enjoy between full charges of the storage battery depends on the type, size, age, and temperature of the battery, and, of course, the load imposed by the

Taxan monitors when precision counts

Dedicated to quality and precision, TAXAN offers a complete line of monitors including green and amber, ultra-high resolution monochrome, plus medium and high resolution RGB monitors.



⊗ **TAXAN** also offers the 410-80, 80 column and RGB card to interface with the Apple IIe.

⊗ **TAXAN** monitors stand alone.

See your local ⊗ **TAXAN** dealer, or call us for details!

⊗ **TAXAN**

TSK Electronics Corporation
18005 Cortney Court
City of Industry, CA 91748
(213) 810-1291

Circle 402 on Reader Service card.

computer and its peripherals, as well as any lights that you may also be running from the battery. For the deep cycle type battery, divide the average current consumption of your computer (in amps) into the manufacturer's

amp-hour rating of the battery you are using. (If you don't know the consumption of your computer, use 5 to 6 amps as a "guesstimate.")

The resulting time in hours takes you to the absolute bitter end for a new battery at 80° F. If the battery is at 32° F, you'll get only 65 percent of that. For a more realistic figure, use 75 to 80 percent of the value obtained above. From an automobile battery of equivalent size, expect to get about one quarter of the operating time of the deep cycle, and not nearly as many charge/discharge cycles.

For example, using Sears, Roebuck's little 32 amp-hour 9601 Deep Cycle RV/Marine DieHard with a load of 5 amps, at 80° F you'd have a bitter end of 6.4 hours, with a probable useful charge duration of about five hours. If the battery were cooled to freezing, you'd expect to get about 3¼ hours of operation between charges. The larger Sears, Roebuck 9650 would yield about 20 hours at 80° F, and 12 hours if the battery were at freezing temperature.

When it comes to recharging, expect to put in 1¼ to 1½ amp-hours for each amp-hour taken out. Because the deep cycle batteries are less tolerant of overcharging than automotive batteries, keep close track of your battery's specific gravity. For a while, at least, a battery checker such as American Optical's Duo-Check or a float-type hydrometer should be your best friend.

Sailing On

Running an Apple on direct current is certainly practical today. As computers become more portable and alternative energy sources more common, this option should become increasingly attractive. Then, after you've charged a battery from your photovoltaic cells, wind mill or water wheel, you'll be able to pile everything into the canoe, hand the Apple its paddle, and off you'll go. ■

I acknowledge with thanks the assistance provided by James McGilvery of Sears, Roebuck and Company, Keene, NH; Daniel Osmer of Micro Services of New England Inc., Keene, NH; and particularly the inspiration, design review, and technical critique of Arthur J. Pennell, Upland Service, Lexington, MA. JD

Alternative Apple Project Supplies

12-volt DC to 117-volt AC Inverters

Mayday Division, Sun Research Inc., Box 210, Old Bay Road, New Durham, NH 03855. Call (603) 859-7110 for more information on this and other inverters.

Frequency controlled, UPS:

60 + 3W	300-watt	\$565
---------	----------	-------

Montgomery Ward

Not frequency controlled, not UPS:

61 A 16104	200-watt Tripp-Lite	\$75.99
61 A 53209	400-watt Tripp-Lite	\$124.99
61 A 53200 F	1000-watt Tripp-Lite	\$419.99

Mail order price does not include shipping and handling.

Sears, Roebuck

Not frequency controlled, not UPS:

28 A 71522	200-watt Tripp-Lite	\$74.99
28 A 71523	400-watt Tripp-Lite	\$124.99
28 A 71531 C	500-watt Tripp-Lite	\$189.99

Frequency-controlled ($\pm \frac{1}{2}$ Hz):

28 A 71520 C	500-watt Tripp-Lite	\$299.99
28 A 71524 C	1000-watt Tripp-Lite	\$449.99

Mail order price does not include shipping and handling.

Terado Corporation, 1068 Raymond Ave., St. Paul, MN 55108. Call (612) 646-2868 for more information and names of local distributors.

A sampling of Terado's many inverters—not frequency-controlled, not UPS:

50-170	Tempest 200-watt	\$130.50
50-132	Mark II 275-watt with battery charger	\$288.00
50-128	Gemini 450-watt	\$257.25
50-133-3A	Super Gemini 900-watt	\$748.00

Prices are suggested list.

Deep Cycle Storage Batteries

Montgomery Ward

61 A 11209 RYD	80 amp-hour	\$66.99
61 A 11210 RYD	105 amp-hour	\$76.99

Mail order price does not include shipping and handling.

Sears, Roebuck

28 A 9601N	32 amp-hour marine and RV DieHard	\$54.99
28 A 9647N	64 amp-hour marine and RV DieHard	\$64.99
28 A 9649N	75 amp-hour marine and RV DieHard	\$74.99
28 A 9650N	110 amp-hour marine and RV DieHard	\$84.99

Mail order price does not include shipping and handling.

Exide

HC-24	90 amp-hour	\$95.25
HC-27	95 amp-hour	\$108.00

Prices are suggested list.

Battery Testers

Specific gravity battery hydrometer from your auto parts store.

American Optical Duo-Check, a compact, convenient and expensive optical battery and antifreeze hydrometer requiring only a single-drop sample. Call (800) 828-1200 for names of local distributors.

Line Cleaner parts—as listed in referenced article.

Miscellaneous 117-volt Electrical Supplies—local purchase.



Now you can get all the help you need to improve your Apple* computing skills...in one place. **inCider** gives you more *practical* information on Apple products and programming than any other source. Every issue covers the field for you with these instructive columns:

- *The Applesoft Adviser* discloses the subtleties of programming in Applesoft Basic.
- *The Assembly Advantage* reveals the power of Assembly language programming.
- *Bent on Business* explains the best ways to increase office productivity with your Apple.
- *Fudge It!* shows you how to add eye-catching color, hi-res, and sprite graphics to your print-outs and games.
- *Interaction—A Child's World* gives you fun programs to introduce your children to computing.
- *III's Company* unlocks the hardware & software secrets of the Apple III.
- *Hints 'n' Techniques* offers affordable solutions to everyday computing problems.

That's not all. Every month over a dozen easy-to-understand articles bring you the latest hardware projects, utilities,

applications, games, and Pascal & Logo programs & tips. Now you can:

- make every purchase a sound investment with the candid buyer's guides and product reviews.
- use the colorful ads to comparison-shop from home.
- read about new products before they reach the stores.

With all this at your fingertips, you could save the cost of your subscription with one wise purchase.

And your subscription to **inCider** is risk-free. If you don't like your first issue,

just write "cancel" across the invoice and return it to us. You won't owe a thing.

Subscribe to **inCider** today. A full year is only \$24.97. Fill out the coupon below or the attached order card right now, and return it to: **inCider** Subscription Department, PO Box 911, Farmingdale NY 11737. For even faster service, call toll free:

1 (800) 258-5473

In New Hampshire call 1-924-9471. Get a 13th issue **FREE** when you enclose payment or charge it on your Mastercard, Visa, or American Express.

*Apple is a registered trademark of Apple Computer Inc.

ENTER my subscription to **inCider** for one year at \$24.97. I understand that with payment enclosed or credit card order I will receive a **FREE** issue, making a total of 13 issues for \$24.97.* This offer voids all previous offers.

☐ Check enclosed ☐ MC ☐ VISA ☐ AE ☐ Bill me

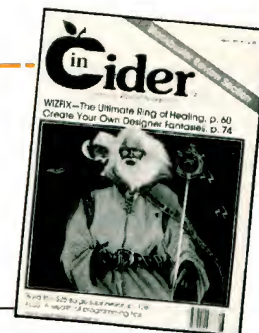
Card # _____ Exp. date _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____



Canada and Mexico \$27.97, 1 year only, US funds drawn on US bank. Foreign surface \$44.97, 1 year only, US funds drawn on US bank. Please allow 6-8 weeks for delivery. Foreign airmail please inquire.

inCider® • PO Box 911 • Farmingdale, NY 11737

342F5

Computer Music Worth Listening To



Award your Apple a conservatory degree with BASE.
It can generate over a thousand notes in any scale,
and, unlike other computer music programs, it uses
fractals to imitate natural patterns.

I have seen many programs for computer-generated music. They all fail one simple test: Does the music sound nice? Is it worth turning on the computer to run the program? I have created computer melodies worth listening to by taking musical factors into account.

Melodic Considerations

Musical scale. A scale is simply the choice of notes available for the melody. This can range from one note to 12, or even more, in an octave. The scale helps determine the "mood" of a

piece. Controlling the scale goes a long way toward creating pleasant music on the computer. Tunes based on the chromatic scale (using all 12 semitones in the octave) appear dissonant and musically neutral. This is one reason for the distasteful sound produced by most algorithms.

Melody. The big problem, once we define a scale, is choosing the actual notes. The most primitive method is simply random pitches. You have probably seen many programs with something like:

$P = \text{INT}(\text{RND}(1) * 255)$

as the basis. This produces what is known as "white melodies"—notes having no relation to one another. White melodies have very little appeal. The brain finds no kind of connection necessary to please it. Figure 1 shows a typical white melody generated by adding together ten dice for each note. We do impose a little order on the whiteness by forcing it to have a normal distribution.

You can write to Jonathan Kandell at 10677
Creeknoll Ct., Cincinnati, OH 45242.



by Jonathan Kandell

The Fundamental Issue

Now that we have rejected white melodies, we are ready to face the crux of the problem—what separates music from noise? The maximum pleasure, in music as well as in other arts, is probably somewhere between the extremes of total randomness and total predictability. To be more exact, the most ordered state is boring, and becomes more aesthetically appealing as more disorder is introduced, up to a point of confusion. But how can we achieve this?

The obvious method is to limit the

random jumps of white notes to a certain interval, usually less than five semitones. If the last pitch was 10, then the next can range from 5 to 15. This kind of sound is termed "brown music," due to the similarity with Brownian movement in chemistry. Figure 1 also gives an example of brown noise. This definitely sounds different from white, yet is still not appealing. It wanders aimlessly, lacking bounce and body. It is hard to find an overall continuity because it is still white in the long run.

Another technique that has been used

is "stochastic" music, a term coined by its chief advocate Iannis Xenakis. The basis of stochastic music is statistical analysis. The random notes are controlled by probability rules input by the user. It is really just a much more complicated form of brown music. To be really good, stochastic music requires many rules—Xenakis uses probability calculus. Attempts that have used fewer rules run into the same problem as brown tunes: While the music may sound nice over a short span of four or five notes, it is still "white" over the whole, thus unap-

```

1 GOSUB 700: GOTO 500
10 FOR I = 1 TO 10: A(I) = INT (
  6 * RND (1)) + 1: C(I) = INT
  ( RND (1) * 6) + 1: NEXT
20 N = X
30 FOR I = 10 TO 1 STEP - 1
40 A = INT (N / 2): B(I) = N - A *
  2
50 N = A
60 NEXT I
70 FOR I = 1 TO 10: IF B(I) < >
  BO(I) THEN A(I) = INT ( RND
  (1) * 6) + 1: C(I) = INT ( RND
  (1) * 6) + 1
80 NEXT I
90 P = 0: D = 0: FOR I = 1 TO 10: P
  = P + A(I): D = D + C(I): NEXT
100 P = P - PT: IF P < 0 THEN P =
  P + PO
110 IF P > PN THEN P = P - PO
120 IF D < 20 THEN D = 1: GOTO 1
  90
130 IF D < 36 THEN D = 2: GOTO 1
  90
140 IF D < 44 THEN D = 3: GOTO 1
  90
150 IF D < 52 THEN D = 4: GOTO 1
  90
160 D = 5
190 NN(X,0) = N(P): NN(X,1) = INT
  (DU(D) / 255) + 1: NN(X,2) =
  DU(D) - ((NN(X,1) - 1) * 255
  )
200 HTAB 19: VTAB 11: PRINT X
210 FOR I = 1 TO 10: BO(I) = B(I)
  : NEXT
220 X = X + 1: IF X = 1025 THEN 3
  00
230 IF PEEK ( - 16384) > 127 THEN
  POKE - 16384,0: VTAB 17: INPUT
  "DO YOU WANT TO CONTINUE COM
  PILATION?": AN$: ON AN$ = "N"
  GOTO 300: VTAB 17: PRINT "
  ": REM 30 SPACE
  IN QUOTATIONS
240 GOTO 20
300 FOR I = 0 TO X - 1
310 POKE 768,NN(I,0): POKE 769,N
  N(I,1): POKE 770,NN(I,2): CALL
  771
320 NEXT
350 HOME: VTAB 10
400 INPUT "LOAD WHICH SCALE? ": N
  AS
401 GOSUB 730
402 SP$ = "": INPUT "F, N, OR S?"
  : SP$: IF SP$ = "S" THEN KK =
  1.5
403 IF SP$ = "F" THEN KK = .6
404 IF SP$ = "N" THEN KK = 1
405 FOR I = 1 TO 5: DU(I) = DU(I)
  * KK: NEXT
408 X = 0: IF NA$ = "" THEN 460
410 ONERR GOTO 1000
420 PRINT CHR$(4)"OPEN"NA$: PRINT
  CHR$(4)"READ"NA$
430 INPUT PO,PN
435 PT = 35 - INT ((PN + .5) / 2
  )
440 FOR I = 0 TO PN: INPUT N(I):
  NEXT
445 POKE 216,0
450 PRINT CHR$(4)"CLOSE"
460 HOME: VTAB 4: PRINT "I AM C
  ONSTRUCTING THE COMPOSITION
  TABLE": PRINT
470 GOTO 10
500 HOME: VTAB 6: PRINT "1) LOA
  D SCALE AND PLAY": PRINT: PRINT
  "2) ADD NEW SCALES": GET AN$
  : ON VAL (AN$) GOTO 350,510
502 GOTO 500
510 HOME: VTAB 3: INPUT "NAME O
  F SCALE? ": NA$
515 PN = 0
520 PRINT: INPUT "NUMBER OF NOT
  ES PER OCTAVE? ": PO
540 PRINT: PRINT "ENTER NOTES I
  N SCALE FROM LOWEST TO H
  IGHEST. USE '/' WHEN FINISH
  ED...": PRINT
550 INPUT N$: IF N$ = "/" THEN P
  N = PN - 1: GOTO 590
560 N(PN) = VAL (N$): PN = PN + 1
570 GOTO 550
590 PRINT: PRINT "HIT RETURN TO
  SAVE "NA$" TO DISK": INPUT
  AN$
600 PRINT CHR$(4)"OPEN"NA$: PRINT
  CHR$(4)"WRITE"NA$:
620 PRINT PO: PRINT PN
630 FOR I = 0 TO PN: PRINT N(I):
  NEXT
640 PRINT CHR$(4)"CLOSE"
650 PRINT: INPUT "DO ANOTHER SC
  ALE? ": AN$: ON AN$ = "Y" GOTO
  510: END
700 DIM NN(1024,2),N(50)
705 KK = 1
710 FOR I = 771 TO 796: READ P: POKE
  I,P: NEXT: RETURN
715 REM
  SOUND ROUTINE BY
  BOB HANSON
716 REM PUBLISHED IN MARCH 1983
  CALL APPLE
720 DATA 173,48,192,136,208,5,
  206,2,3,240,9,202,208,245,17
  4,0,3,184,80,236,206,1,3,208
  ,234,96
730 DU(1) = 38: DU(2) = 83: DU(3) =
  173: DU(4) = 353: DU(5) = 713
740 RETURN
1000 PRINT CHR$(4)"DELETE"NA$:
  PRINT CHR$(4)"CATALOG": GOTO
  400

```

Program listing. BASE.

pealing. We will use a simpler technique that takes advantage of a subtle statistical fact about the world.

Fractal Curves

Some of the most precise work in the mathematics of aesthetics has been done by two mathematicians, Benoit Mandelbrot and Richard F. Voss at the Wagner Institute. Their work concerns the study of fluctuating data exhibiting a $1/f$ spectral density. While the mathematics is complicated, the concept can be explained quite simply: Curves having a $1/f$ spectral density look the same no matter how closely we examine them—the part is related to the whole. Statistically, $1/f$ curves vary in randomness between white and brown curves. See Figure 1 again.

Mandelbrot, in his *Fractals: Form, Chance and Dimension*, first recognized the large occurrence of $1/f$ curves in nature. He found them in fluctuations in river levels, shapes of flickering flames, gnarled branches of trees, coastlines, star clusters, clouds, variations in sunspots, the wobbling of the earth about its axis, undersea currents, and traffic flow. Voss wondered whether good music exhibited this same tendency, and found that all types of music do indeed have $1/f$ distribution.

One method of creating $1/f$ music is by using data having $1/f$ characteristics. Voss himself used transistor residuals for his music studies. Other composers have used patterns from nature without realizing Voss's mathematics. Charles Dodge used fluctuations in the

earth's magnetic field to create a beautiful work. Most natural patterns, however, are too brown to provide a basis for musical composition.

Can $1/f$ curves be generated from scratch by computer? In the "Mathematical Puzzles and Games" column of the April, 1978 *Scientific American*, Voss offers just such a method. Despite the complicated mathematics of the curves themselves, the method is relatively simple. The listed program uses a computerized version of this method as its base.

**"Curves having a
 $1/f$ spectral density
look the same
no matter how closely
we examine them."**

Duration. Lastly, we have duration, or length of notes. We will vary the duration with a $1/f$ curve also.

The Program

Refer now to the program listing. Line 1 jumps to the initialization routine that pokes the sound output data. The routine I used is a version of the old system master routine, Lemonade Stand, modified by Bob Hanson in the March, 1983 *Call-A.P.P.L.E.* to allow durations longer than 255. Bob very graciously allowed me to use his routine.

After initialization, we jump to the menu at 500, offering the load and play or add scale functions. Figure 2 lists some scales I have developed. If you wish to build your own scales, consult Figure 3 for the pitch values of the notes.

After loading a scale, you will be asked to choose a tempo: fast, normal, or slow. For both the scale and tempo questions, press return to default to the previously-typed answer. If $X=0$ is removed from line 408, then a tune can be composed using a mixture of scales.

The heart of the algorithm lies in

Figure 1.
Melodic outlines of three kinds of music.

lines 10-240. Voss's 1/f generation technique consists of assigning a die to each figure in a binary number of given digits (ten in our case). The pitch is the sum of these dice. The binary number is incremented through a given cycle (1024 here). The die representing any digit that changes during the increment is rethrown, and all dice are summed again to get the new pitch. It becomes evident why 1/f curves combine chance with stability: The digits/dice further left change less often, while those on the right change more frequently.

In our program we have the computer throw the dice originally in line 10 for both the pitch, A(*), and duration, C(*). Lines 20-60 convert a number, X, into binary. In line 70 we compare each digit with its previous condition (1 or 0) and rethrow dice for any differences we discover.

Line 90 sums the dice for both pitch and duration. We now must test the pitch to see that it stays within the limits of our sound routine. We first translate it down PT semitones in order to correlate the P range (10-60) to our scale range. Lines 120-160 convert the duration, D, into one of five units.

Both of these are now entered in the composition array. NN(X,0) is the pitch. NN(X,1) is the duration MOD 255. NN(X,2) is the duration.

All that is left to do is put the current digits into the old digit array, and increment X. A routine at 230 allows the process to be stopped if the user gets bored.

Lines 510-650 add new scales to the disk in the form of text files. The routine is pretty self-evident. I might mention that the number of notes per octave does not include the repeat of the first note an octave higher. The chromatic scale, for example, has 11 notes per octave.

A Couple of Catches

The foremost defect of this program is slowness. The computer rolls dice faster than Superman, yet it can still be tiresome to wait for a thousand notes to be constructed. Therefore, I can't urge you enough to compile the program! It makes the program so much more enjoyable that, if you don't own a compiler, send me a blank disk with

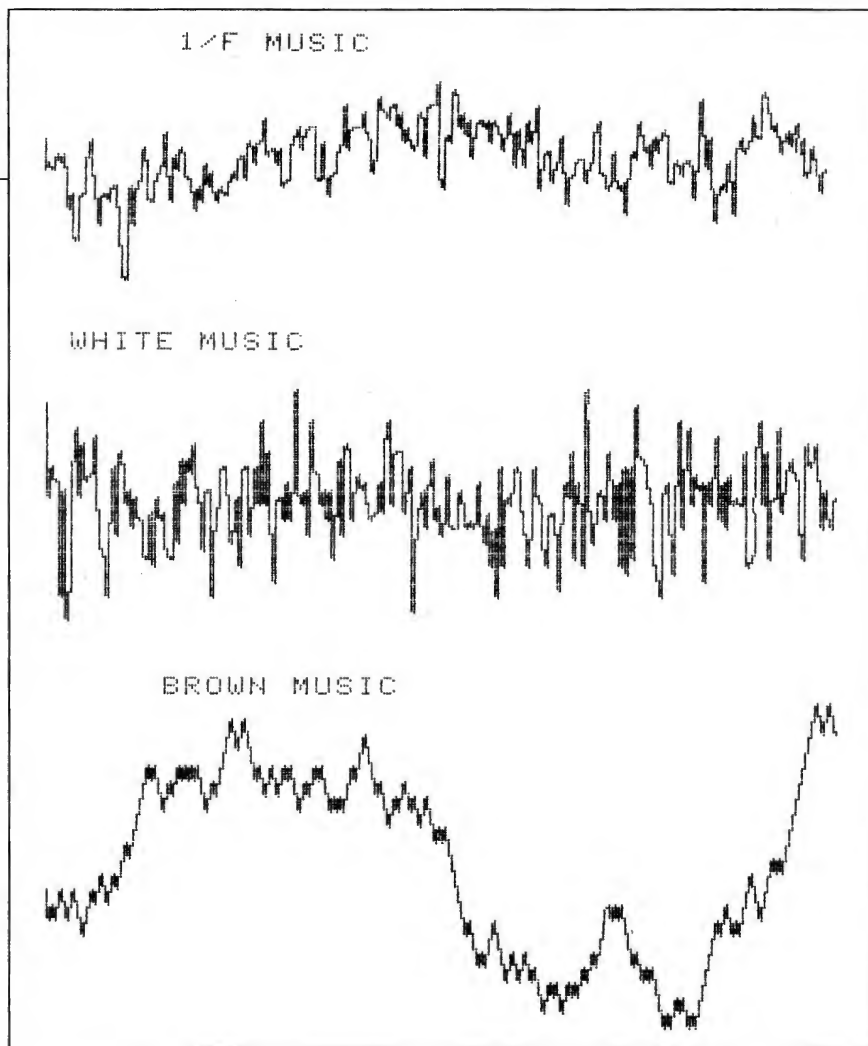


Figure 2. Pitch values for 14 scales.

SCALE	NO./OCT.	PITCHES
Chromatic	11	same as figure 3
G major	7	255 228 204 192 172 152 136 128 115 102 96 86 76 68 64 57 50 47 42 37 33 31
G Aeolian	7	255 228 216 192 172 162 145 128 115 108 96 86 81 72 64 57 53 47 42 40 35 31
G Mixolydian	7	255 228 204 192 172 152 145 128 115 102 96 86 76 72 64 57 51 47 42 37 35 31
G Lydian	7	255 228 204 182 172 152 136 128 115 102 91 86 76 68 64 57 51 45 42 37 33 31
G Phrygian	7	255 242 216 192 172 162 145 128 121 108 96 86 81 72 64 60 53 47 42 40 35 31

Figure 2 continued.

SUPER SOFTWARE SPECIALS!

\$1.00 credit for phone orders over \$100.00

EDUCATIONAL (OUR SPECIALTY)

	LIST	SPECIAL
• Control Data (Plato)		
Basic Number Facts	49.95	35.96
French Vocabulary Builder ..	49.95	35.96
• D.L.M.		
Alligator Mix	34.00	24.66
Dragon Mix	34.00	24.66
• Davidson		
Math Blaster!	49.95	35.96
Word Attack!	49.95	35.96
Speed Reader II	69.95	49.76
• Milton Bradley		
All About Commas	39.95	28.56
All About Fractions	39.95	28.56
• P.D.I.		
New Step by Step	89.95	64.56
Step by Step II	89.95	64.56
• Spinnaker		
In Search of	39.95	28.56
Snooper Troops 1 or 2	44.95	32.26
• Xerox		
Chivalry	49.95	35.96
S'Bear Opposites	39.95	28.56
S'Bear Numbers	39.95	28.56
• Miscellaneous		
Algebra Arcade	49.95	35.96
Bank Street Writer	69.96	49.76
Crossword Magic 2.0	49.95	35.96
Early Games	29.95	21.86
Eating Machine	49.95	35.96
Homeword	please call	
Logo (Krell)	89.95	75.46
Master Type	39.95	28.56
Quadratic Equations (CBS) ..	24.95	18.06
Rocky's Boots	49.95	35.96
SAT (CBS)	150.00	108.96
SAT (Harcourt Brace)	79.95	57.86
SAT (Krell)	299.95	252.96

Ask for FREE price list

Educators: ask for special educational catalog

HARDWARE

Flip 'n File 50 (with lock)	39.95	28.56
Koala Pad	124.95	90.46
Gibson light pen	349.00	251.26
Wildcard II	139.95	110.19
Wildcard +	169.95	133.56

OTHER

Bookends	124.95	90.46
BurgerTime	34.95	23.46
Defender (Atarisoft)	34.95	29.69
Dig Dug (Atarisoft)	34.95	29.69
Enchanter	49.95	35.96
Ess. Data Dup. (EDD)	79.95	58.16
Gumball	29.95	21.86
Infidel	49.95	35.96
Lode Runner	34.95	24.86
Nibbles Away II	69.95	49.76
Wizardry	49.95	35.96



C.O.D. • M.O. • Cert. Checks • School P.O.
• VISA • MasterCard • Checks Allow 2 Weeks
• N.Y.S. Res. Add Sales Tax • US Orders
Under \$150. Add \$2.00 P & H • All Canadian,
US Funds \$3.00 P & H • Foreign, Charges Only,
Min. P & H \$7.00

Box 525, Dept. J
East Setauket, N.Y. 11733
(516) 751-2535

Figure 2 continued.

G Dorian	7	255	228	216	192	172	152	145
		128	115	108	96	86	76	72
		64	57	53	47	42	37	35
		31						
Mediterranean 1	7	255	228	216	182	172	152	145
		128	115	108	91	86	76	72
		64	57	53	45	42	37	35
		31						
Mediterranean 2	7	255	242	204	192	172	162	145
		128	121	102	96	86	81	72
		64	60	50	47	42	40	35
		31						
Mediterranean 3	5	255	216	192	172	145		
		128	121	96	86	72		
		64	53	47	42	35		
		31						
Hexascale	6	255	228	216	192	172	145	
		128	115	108	96	86	72	
		64	57	53	47	42	35	
		31						
Chinese	5	255	228	204	172	152		
		128	115	102	86	76		
		64	57	50	42	37		
		31						
Indian 1	5	255	204	192	172	145		
		128	102	96	86	72		
		64	51	48	42	35		
		31						
Indian 2	7	255	242	204	192	172	162	136
		128	121	102	96	86	81	68
		64	60	50	48	42	40	33
		31						

an SASE, and I will send you a compiled version free of charge.

Please remember that this program just touches the surface. The music it produces will never sound as nice as Beethoven because, while our 1/f curves make it statistically more pleasant than both white and brown, we

still cannot make a program that captures the "magic" of musical genius. Perhaps it is best that we can't.

Even so, the program surprises me sometimes. Much investigation can be done in combining 1/f with stochastic rules. Please write me if you come upon some interesting results! ■

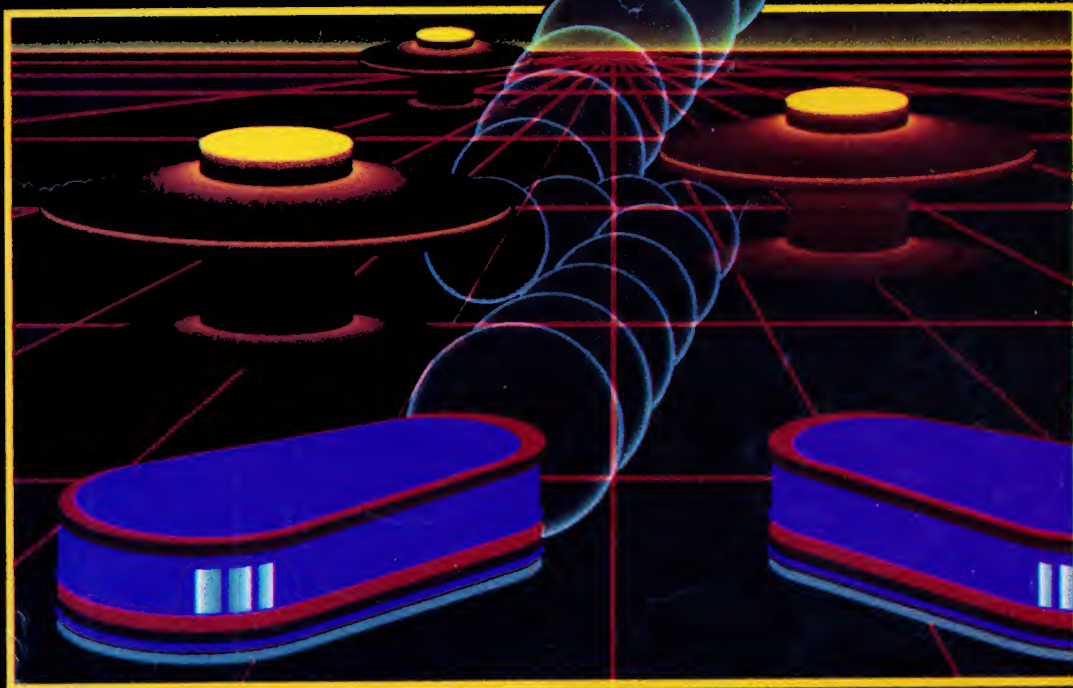
G	=	128	G	=	64	G	=	31
F#/Gb	=	136	F#/Gb	=	68	F#/Gb	=	33
F	=	145	F	=	72	F	=	35
E	=	152	E	=	76	E	=	37
D#/Eb	=	162	D#/Eb	=	81	D#/Eb	=	40
D	=	172	D	=	86	D	=	42
C#/Db	=	182	C#/Db	=	91	C#/Db	=	45
C	=	192	C	=	96	C	=	47
B	=	204	B	=	102	B	=	51
A#/Bb	=	216	A#/Bb	=	108	A#/Bb	=	53
A	=	228	A	=	115	A	=	57
G#/Ab	=	242	G#/Ab	=	121	G#/Ab	=	60
G	=	255	G	=	128	G	=	64

Figure 3. Pitch values for the chromatic scale.

TAKE A BREAK!

Circle 156 on Reader Service card

For Apple II,
Apple II+,
and Apple IIe



WITH NIGHT MISSION PINBALL

You deserve the best. You've earned it. Now reward yourself with a session of **Night Mission PINBALL**, the most realistic and challenging arcade simulation ever conceived! ■ Stunning graphics and dazzling sound effects put **Night Mission PINBALL** in a class by itself. Game features: multi-ball and multi-player capabilities, ten different professionally designed levels of play and an editor that lets you create *your own* custom modes. ■ So take a break with **Night Mission PINBALL** from SubLOGIC. Winner of *Electronic Games* magazine's 1983 Arcade Award for Best Computer Audio/Visual Effects.



See your dealer . . .

or write or call for more information. For direct orders please add \$1.50 for shipping and specify UPS or first class mail delivery. Illinois residents add 5% sales tax. American Express, Diner's Club, MasterCard, and Visa accepted.

Order Line: 800/637-4983

subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex 206995



Computer Learning Center
P.O. Box 45202 J
Tacoma, WA 98444

\$4

BUYS

IT'S ALL YOURS

Programs on Apple BASIC, loan & interest tables, taxes, Visicalc & math formulas, home inventories, educational records, recipe files, music, Epson printer tricks.

These Public Domain Software (PDS) programs are now available through the Computer Learning Center for prices that rival blank disks.

All of the disks are supplied in DOS 3.3 (16 sector) format. We do not supply DOS 3.2 formatted disks.

DOCUMENTATION

Documentation, if it exists, is on the disk with the program. Usually the documentation has the same name as the program except that a 'DOC' is added to the name. HOW TO READ THIS LISTING The name of each disk is in bold lettering, followed by a number. USE THE NAME AND NUMBER WHEN ORDERING. The column of titles under the disk name shows the programs on that volume. The left column indicates the language required by the program.

Code Requirements

A Applesoft in ROM or Apple soft firmware card or Language card and DOS master disk.

I Integer in ROM or Integer firmware card or Language card and DOS master disk.

B These programs are written in machine code and will work in any Apple. However, if the program uses routines from Integer or Applesoft, then the requirements for I and A programs apply.

T These are text files and are used by the other three program types.

The second column is the number of sectors on the disk used by the program.

APPLE III OWNERS

Most of these PDS disks will work on the Apple III in emulation mode. We have not tested all of the programs nor do we have a list of what works. So be careful. "Caveat Emptor."

PROGRAM CRASHES

If a program crashes, the disk may have a bad sector. We will replace any disk that has a bad copy of a program or that has media defects. Some programs will give SYNTAX errors. These are not media defects or bad copies.

ONE FINAL NOTE: PDS is not commercial quality and is supplied as is.

** Some disks have less than 20 programs

*Apple is a registered trademark of Apple Computer Company

APPLE TUTOR

Apple Tutor 001

I 004 Basic Programming
I 036 Basic Programming 1
I 047 Basic Programming 2
I 048 Basic Programming 3
I 044 Basic Programming 4
A 004 Basic-Integer
B 022 Basic-Integer.X
I 019 Conventions
I 016 CPU 6502
I 002 Hello Sample
I 030 Micro 6502 Simulation
I 051 Mini Assembler Tutorial
A 022 Random Drill Tutor 3.2 Only
I 007 Sweet 16 Disassembler
I 004 Sweet 16 Speed
B 002 Sweet 16 Speed.X
I 026 Top Down Programming

FOOD

Food 035

B 004 Alpha#
A 026 Calorie Counting Program
A 014 Calorie Rqmts

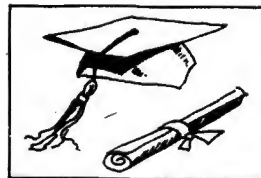
A 029 Food Values
A 033 Ideal Body Weight
A 031 Life Expectancy
I 026 Life Expectancy Test
A 017 Metric Kitchen
A 043 Recipe Box
T 002 Indexrecipe File
T 002 Recipe File
A 042 Recipe Calorie Cost
A 003 Recipe Cost
A 026 Recipe Cost Per Serving

MUSIC & SOUND

Music & Sound 065

T 003 America
I 012 Hanon Etude #1 in C
T 002 Happy Birthday
A 015 Harmonic Analysis
I 019 Music Computer
I 036 Music Functions
I 011 Music Gee
I 023 Music in IB
I 014 Music Maker
I 017 Music Mozart Theme
I 007 Music Rigby
I 026 Music Stairway to Heaven
A 004 Music Start

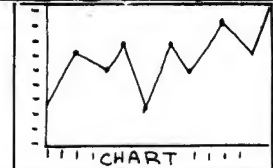
I 030 Music Two Voices
I 022 Music Writer 3
I 008 Musical Keyboard
B 002 Musical Keyboard.X
A 017 Musical Memory
I 010 Name That Tune
I 007 Sound Effects Demos
A 005 Sound Effects How to
I 007 Sound Effects Random
A 003 Sound Routine
I 011 Sounds And Music Starwars
I 006 Swanee River
T 038 Tunes



EDUCATION & SCHOOL

Education & School 028

I 026 Alphabet & Sound
A 004 Class Boy Girl Ratio
A 030 Class Grade Book
A 038 Class Grader
A 004 Class Grader Initialize
A 015 Final Grade
A 004 Final Grade Doc
A 014 Fourth Grade Demo
I 007 Letter Discrimination
I 006 Spelling
A 016 Student Grade Average
A 022 Student Head Count
A 004 Student Head Count Doc
I 010 Test in Woodworking
A 042 Test Maker
A 019 Test Maker Multi Choice
I 013 Typing Practice
A 016 Typing Practice-NW
A 005 X-Averages
A 003 X-Date
T 002 X-E.File
T 002 X-File
A 005 X-File Init
I 009 X-Grading Instr
I 002 X-Intro Needed
I 002 X-School Menu Needed
B 048 X-School 1
I 002 X-Schoolfile
A 005 X-Student Names
A 005 X-Student Names Grades
A 004 X-Test Grades



MATH & STATISTICS

Math & Statistics 061

A 003 Angle Conversion
A 012 Anglo to Metric III
A 003 Area of Polygon
A 008 Binomial Distribution
A 004 Blackbody
A 003 Chi Square Distribution
A 004 Chi Square Test
A 004 Coordinate Conversion
A 008 Coordinate Plot
A 003 Curvilinear Interpolation
A 002 Derivative
A 016 Dfit
A 011 Differential Eqn Solver Demo
A 004 Exponential Regression
A 004 F Distribution
A 004 Gaussian Quadrature I
A 003 Geometric Mean
A 004 Geometric Regression
A 004 Greatest Common Denominator
A 005 Histogram
A 003 Linear Interpolation
A 007 Linear Programming
A 004 Linear Regression
A 005 Mann Whitney U Test
A 022 Math Drill III
A 019 Math Multiply Drill
A 019 Math-NW
A 013 Matrices
A 004 Matrix Inversion I
A 004 Matrix Multiplication
A 004 Matrix Operation Simple
A 004 Mean Vari Stdr Devia I
A 007 Multiple Linear Regression
A 004 Normal Distribution
A 006 Nth Order Regression
A 004 Number Combinations
A 002 Parabola Plot
A 003 Permutation Combination I
A 007 Permutation Combination II
A 003 Poisson Distribution
A 006 Polar Equation Plot
A 011 Polyfit
A 013 Polynomial Regression
A 006 Power Curve Fit (c)
A 003 Prime Factors I
A 006 Prime Factors II
A 003 Quadratic Formula
A 006 Quadratic Surface
A 015 Right Triangle Solver
A 016 Root Finder

20 PROGRAMS ^{**}

JUST \$4 BRINGS ONE HOME

YOU WIN TWICE

FREE PROGRAMS

Each one of these Public Domain Software programs is unique. Some are early versions of copy-righted programs donated by the author. Some are simple versions of more complex programs available on the market for a higher price. And, some are actual routines later combined into a larger program now selling for \$\$\$\$\$.

Become a more aware buyer. Experience the vast array of Public Domain Software and learn what inexpensive software can do for you.

Take a look at a 30¢ payroll program. The next time you go out to buy commercial software you will really know what you're looking for.

Like programming and have some sparetime? Order a PDS disk. Choose one that interests you and work on it. Clean-up, fix, enhance or complete a program on the disk. Return the disk to us with a note describing the changes and we will trade the program for a program/disk of your choice.

A 005 Roots of Poly Half
A 005 Roots of Polynomials
A 004 Simpson's Rule
A 004 Simultaneous Equations
A 004 T Distribution
A 005 T Distribution Test
A 003 Trapezoidal Rule
A 005 Triangle Factors
A 007 Triangle Parts
A 003 Trig Polynomial
A 004 Vector Analysis
A 003 Vector Operations



BUSINESS & FINANCE

Business & Finance 018

A 005 Annuity Principal & Interest
A 003 Annuity Regular Deposits
A 018 Annuity-NW
A 013 Bond Price & Interest
A 012 Bond Value
A 032 Budget Monthly
A 013 Decision Matrix
A 054 Financial Pak
A 016 Investment Annuity Forecasts
A 012 Keogh Savings Program
A 014 Loan Amort Schedule
A 008 Loan Direct Reduction
A 004 Loan Interest
A 029 Market Evaluator Pak
A 009 Mortgage Calculation
A 007 Nicer Writer-NW
A 003 Regular Deposits I
A 007 Sales Tax at 6%
A 017 Security Analysis
A 006 Security Analysis Copy Data
A 003 Simple Interest
A 010 Stock Option Analysis
A 016 Stock Option Covered Hedge
A 015 Stock Option Pricing I
A 021 Stock Option Pricing II
A 008 Stock Portfolio Valuation
A 028 Stocks
A 010 Trip Cost Analysis

Business & Finance 019

I 030 Calendar Personal
I 006 Letter Writer
I 006 Letter Writer Enhance
I 014 Phone List
I 005 Real Estate Plot

B 034 Real Estate Plot.X
A 012 Stock Monitor I
A 015 Stock Monitor II
A 024 Trend Line Analysis
A 006 Visicalc Coord Formulas
A 012 Visicalc D File Printer
A 014 Visicalc Formulas
A 006 Visicalc Formulas Instr

Business & Finance 020

A 025 Apartment Mortgage
A 052 Banking and Finance
A 058 Business Finance
A 006 Check Stub
A 020 Household Expenses Profile
A 041 Income Tax 1040 for 77
A 029 Inventory Company
A 004 Inventory Cost File Entry
A 016 Inventory Home I
A 022 Inventory Model
A 009 Inventory Print-NW
A 003 Inventory Shortest
A 003 Inventory Shortest Read
A 023 Inventory.
A 003 Inventory.DOC
A 019 Inventory.File Create
A 029 Inventory.File Read
A 018 Stock Market Forecaster
A 011 Stock Valuation

UTILITY

UTILITY 086

B 002 Ep1.3
B 002 Ep2.3
B 002 Ep3.3
B 003 Ep4.3
A 002 Epson Catalog Dbl Strike
A 008 Epson Driver Instr
B 002 Epson Driver.
A 002 Epson Greeting
A 004 Epson Labels I
A 005 Epson Labels II
A 006 Epson Labels III
A 002 Epson Lower Case
A 002 Epson MX/FX-80 List Capture
A 008 Epson MX/FX-80 List Format
A 005 Epson MX/FX-80 List Instr.

A 003 Epson MX80 Catalog
A 005 Epson MX80 Demo I
A 007 Epson MX80 Demo II
A 024 Epson MX80 Label Maker I
A 052 Epson MX80 Label Maker II
A 053 Epson MX80 Label Maker III
B 034 Epson MX80 Label.PIC
A 003 Epson MX80 Letterhead
A 015 Epson MX80 Program List
A 023 Epson MX80 Reminder Calendar
A 033 Epson MX80 Setup I
A 033 Epson MX80 Setup II
A 005 Epson Utility 3.3 Demo
A 023 Epson Utility 3.3 Info
A 022 Epson Word Game
A 003 Epson.Exec.Maker.A3.3
I 003 Epson.Exec.Maker.I3.3
B 005 Text.Demo
B 004 Text.MXtest
T 002 XEpson.V3.3

FREE SOFTWARE?
You bet!

Send \$1 for your catalogue of Public Domain Software from the
Computer Learning Center
P.O.Box 45202J Tacoma,
WA 98444

PublicDomainSoftwarsSuppliedAsIs

()AppTutor 001 ()Bus&Fin 020 ()Utility 086
()Bus&Fin 018 ()Math&Stat 061 ()Educ&Sch 028
()Bus&Fin 019 ()Food 035 ()Mus&Snd 065

()Please send me a catalogue of all your Public Domain Software. I enclose \$1 for shipping and handling.

Send check or money order (International in US\$, please) for the total number of disks x \$4 each plus applicable taxes to: Computer Learning Center, P.O.Box 45202J, Tacoma, WA 98444. Overseas, Canada, and Mexico add 20% to total for shipping.

Name _____
Address _____
City _____ State _____ Zip _____ Phone _____
Signature _____
Visa/M.C.# _____ Exp.date _____

PublicDomainSoftwarsSuppliedAsIs

Ssserpent

**Ssslide this snake around your screen.
Chase those elusive boxes, but if you
cross yourself, you lossse!**

by Dennis M. Marks

The idea of Serpent is to lead a snake to boxes that appear randomly on-screen. The A, Z and arrow keys control the snake's movement. You earn points and the snake grows when it reaches a box. If the snake hits a wall, runs over itself, or tries to reverse direction, you lose. This may sound easy, but a novice player rarely earns over a few points.

The program works as follows:

Lines 10-60 initialize the shape table and set up the storage area for the coordinates of the snake.

Lines 70-110 draw the walls and initialize variables.

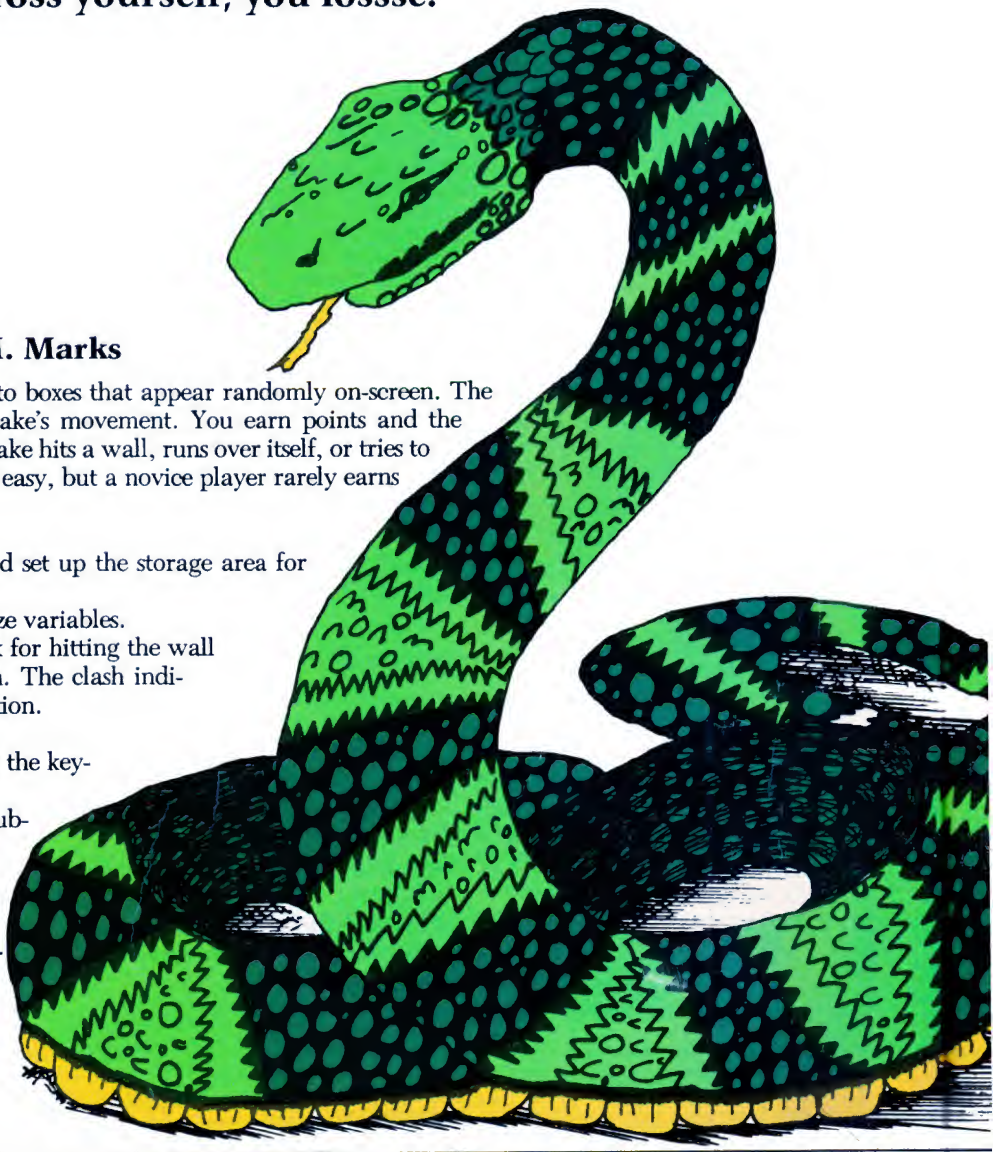
Lines 120-160 move the snake and check for hitting the wall or the snake. Line 140 checks for the clash. The clash indicator values were obtained by experimentation.

Line 170 calls the draw box subroutine.

Lines 180-320 move the snake and check the keyboard for A, Z or arrow keypress.

Lines 330-430 constitute the draw box subroutine. The box is left on the screen for ten cycles and is then repositioned within one to ten cycles. The routine verifies that the box will not be drawn over the snake in line 390.

Lines 440-470 end the game. ■



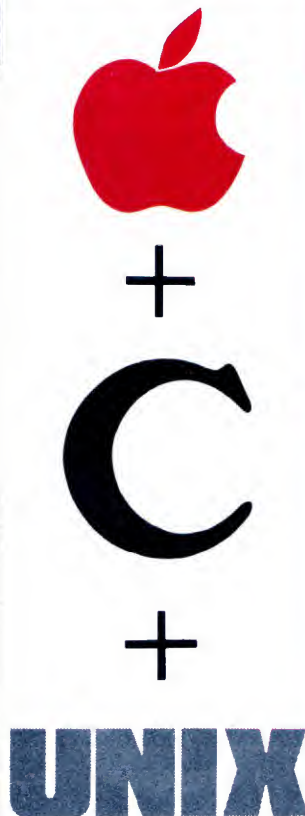
You can write to Dennis M. Marks at 426 W.
Dryden St., Glendale, CA 91202


```

10 HOME : HGR
20 HCOLOR= 3: ROT= 0: SCALE= 1
30 DIM ST$(800,1)
40 FOR X = 1 TO 23: READ P: POKE
   767 + X,P: NEXT
50 DATA 2,0,6,0,13,0,45,53,63,55
   ,45,53,0,45,45,53,54,62,63,6
   ,3,36,36,0
60 POKE 232,0: POKE 233,3
70 FOR X = 72 TO 204 STEP 4: DRAW
   1 AT X,2: NEXT
80 FOR X = 72 TO 204 STEP 4: DRAW
   1 AT X,155: NEXT
90 FOR Y = 3 TO 154 STEP 3: DRAW
   1 AT 72,Y: NEXT
100 FOR Y = 3 TO 154 STEP 3: DRAW
   1 AT 204,Y: NEXT
110 X = 140: Y = 80: L = 1: N = 1: C =
   1: DI = 1
120 ST$(N,0) = X: ST$(N,1) = Y
130 N = N + 1: IF N = 801 THEN N =
   1
140 XDRAW 1 AT X,Y: CL = PEEK (2
   34): XDRAW 1 AT X,Y
150 IF CL = 0 THEN 440
160 IF CL < > 12 THEN PRINT CHR$(
   7): XC = 1: LL = LL + 5: C =
   C + 5: VTAB 23: HTAB 10: PRINT
   "SCORE: "; LL;
170 GOSUB 330
180 DRAW 1 AT X,Y
190 IF C = 0 THEN XDRAW 1 AT ST
   $(L,0), ST$(L,1): L = L + 1: IF
   L = 801 THEN L = 1
200 IF C > 0 THEN C = C - 1
210 K = PEEK ( - 16384)
220 IF K < 128 THEN 280
230 POKE - 16368,0
240 IF K = 193 THEN DI = 1
250 IF K = 149 THEN DI = 2
260 IF K = 218 THEN DI = 3
270 IF K = 136 THEN DI = 4
280 IF DI = 1 THEN Y = Y - 3
290 IF DI = 2 THEN X = X + 4
300 IF DI = 3 THEN Y = Y + 3
310 IF DI = 4 THEN X = X - 4
320 GOTO 120
330 IF XC > 1 THEN XC = XC - 1: GOTO
   430
340 IF XC = 1 THEN XDRAW 2 AT X
   X,Y: XC = 0
350 RR = INT ( RND (1) * 10)
360 IF RR < > 0 THEN 430
370 XX = INT ( RND (1) * 123) +
   76
380 YY = INT ( RND (1) * 151) +
   3
390 XDRAW 2 AT XX,YY: CL = PEEK
   (234): XDRAW 2 AT XX,YY
400 IF CL < > 18 THEN 370
410 DRAW 2 AT XX,YY
420 XC = 50
430 RETURN
440 VTAB 23: HTAB 1: PRINT "CRAS
   H": CHR$(7): CHR$(7): CHR$(
   7): CHR$(7): PRINT "PLAY A
   GAIN? ";
450 VTAB 24: HTAB 13: GET YN$: IF
   YN$ = "Y" THEN RUN
460 IF YN$ = "N" THEN TEXT : HOME
   : END
470 GOTO 450

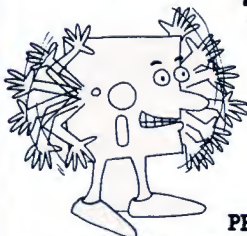
```

Program listing. Serpent.



Circle 421 on Reader Service card.

Tired of Static Get Hires Pictures? GRAPHICMASTER



The Visual Presentation System

and watch your Apple
graphics presentations
suddenly come alive!

PEELINGS MAGAZINE SAYS . . .

"The power which Tidbit Software has placed at the fingertips of the average user is awesome. Graphicmaster is a tool no Apple Graphics user should be without." PEELINGS II, Vol 4, Num 9, 1983

- **GRAPHICMASTER** \$79.95
- **XTRAFONTS** \$20.00
additional fonts for GM
- **MICRO/TYPOGRAPHER** \$29.95
Shape-table and font builder
with display system*

NOTE: MICRO-TYPOGRAPHER fonts are NOT supported by the GRAPHICMASTER's bit-mapped graphics.

TIDBIT Software (805) 969-5834
P.O. Box 5579, Santa Barbara, CA 93108

AZTEC C65

A POWERFUL, PROFESSIONAL, AND PORTABLE "C" LANGUAGE
DEVELOPMENT SYSTEM FOR APPLE COMPUTERS

AZTEC C65 brings all the power of "C" to the APPLE II and APPLE III. The AZTEC C65 "C" compiler generates fast 6502 assembler code. Run time support includes full UNIX I/O, general utility functions, scientific math functions, overlay support, and device driver interfaces.

AZTEC C65 is a professional development system. It includes APPLE SHELL — a UNIX like development environment. VED — a full screen editor. AS65 — a

relocating 6502 assembler, LN65 — a full feature linkage editor, MKLIB — a library utility, and a number of other development utilities.

AZTEC C65 code is portable to AZTEC C compilers for CP/M-80, PC DOS, MS DOS, CP/M-86, TRS 80 and COMMODORE 64. Code is easily transferred to and from UNIX V7. Cross compilers are available from UNIX, PC DOS, MS DOS, CP/M-86, CP/M-80, and others.

PRICES

AZTEC C65 - APPLE DOS 33	\$199
PC DOS, MS DOS, CP/M-86, CP/M-80 to 6502 CROSS	\$750
UNIX to 6502 CROSS (PDP-11)	\$2000
"C" TUTORIAL SYSTEM (upgradable to full AZTEC C65)	\$95
AZTEC C65 MANUAL	\$35
AZTEC C65 without manual	\$169
AZTEC CII for CP/M-80 (MP/M-80)	\$199
AZTEC C65 for PC DOS, MS DOS, or CP/M-86	\$249

MANX
software systems

Call for information on AZTEC C65 for ProDOS and other 6502 systems.

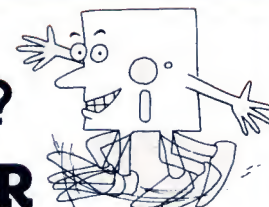
ORDER BY PHONE OR MAIL — DEALER INQUIRIES INVITED

MANX SOFTWARE SYSTEMS
BOX 55, SHREWSBURY, NJ 07701

Order Phone: 800-221-0440

Information and NJ Orders: 201-780-4004

Telex: 4995812



TIDBIT



SOFTWARE

APPLE is a trademark of
Apple Computers Inc

De-Bug Collection

Getting the bugs out is an important part of the creative process. Don't be afraid to risk mistakes.

by Molly Watt

The Mark II, one of the early computers, simply wasn't working. Something was wrong and everyone involved joined in to investigate the problem. After trying many solutions, someone discovered a large moth stuck in one of the machine's circuits. After they removed the bug, the computer worked.

This true story has become part of the computer culture. Since then, all problems with computers and computer programs that don't work as expected are called "bugs." Hence, the whimsical appellation "debugging" for the process of trapping or isolating the bug in order to correct it. Debugging is one of the most important aspects of programming.

Logo, an instructional computer language developed at M.I.T., teaches debugging skills. Bugs are not simply an irritating nuisance to be avoided. There is probably no such thing as a computer program that works the first time without bugs. Can you imagine a writer who never reworks ideas? The very process of writing implies drafts and revision as essential ingredients. Computer programming is the same.

Drawing a Tree

My first experience using a computer was at the M.I.T. Logo Lab in 1978. The first problem I set myself was to teach the turtle to draw a tree. I struggled to create the large, gnarled oak of my memory. My image was transformed into a triangle on a lolly-

pop stick! Sweating with creative exhaustion, I turned to my husband, expecting praise for a job well done. Instead, he suggested ways to extend and change the project into a more complex tree. Would I like to write a program which made branches on the tree, or one that varied the size of the tree, or one that created a forest? I didn't want to risk moving further into this unknown computer world. Creating the drawing was hard work. Yet I heard my husband say, "But you haven't made any mistakes yet!"

Maybe there was another way to look at mistakes. After a lifetime devoted to avoiding them—and the shame associated with them—perhaps there was something to learn from mistakes when working at a computer.

Procedural Programming

Logo is designed for programming in procedures. Each small procedure accomplishes one task. It does whatever it is written to do, independently from any larger program or superprocedure it is plugged into. Therefore, each bite-sized procedure or program can work on its own. Getting six small programs to work, one right after another, is easier and more efficient than one large program that does the same task. Locating an error in a program longer than several lines is incredibly frustrating and time-consuming. Using the procedural programming style of Logo is an important aid for the inevitable debugging

of the program. Working in an orderly way can also minimize bugs in the first place.

Planning the Program

When Tanya and Bill decided to write a program to draw a boat, they planned the process in a series of steps. First Tanya drew the boat on paper while Bill wrote down a list of the parts of the boat in the order she drew them.

```
TO BOAT
  MAST
  FLAG
  SAIL
  HULL
  TRAVEL (added in anticipation
  WATER of moving the turtle)
END
```

Then they created a procedure tree (Figure 1) to help them visualize their plan. Through it they demonstrated their understanding of the flow of commands and gave them space to add new procedures.

Drawing the Mast

Now it was time to write the program. They worked on each procedure in turn, starting with MAST. Af-

Molly Watt was an elementary school teacher and administrator for more than twenty years. Currently, she is writing Teaching with Logo's Power, to be published by Addison-Wesley in 1984. She teaches Instructional Computing at Keene State College. Write to her at Gregg Lake Road, Antrim, NH 03440.

- **DISCOVER** how professionals upgrade their systems with affordable add-ons
- **LEARN** how not to over-invest in unnecessary software
- **EXPLORE** new uses for your computer

Get the most out of your computer with...

EASY ACCESS™ is the authoritative, easy to read, monthly newsletter that can save you money... save you time... and show you new ways to use your personal computer

In straightforward, non-technical language, EASY ACCESS answers the questions most often asked by computer users who want to get the most out of their systems. Computer magazines help, but they don't go far enough. And, retail sales people, who speak computerese, certainly aren't the answer.

EASY ACCESS is written especially for you and your system As a subscriber you'll read about software and hardware that are compatible with *your* system. Yes, there are multiple editions of EASY ACCESS—one for each major hardware system—You choose the edition that matches *your* system.

Plus, EASY ACCESS gives you behind-the-scenes input on what's happening in the industry (and what it means to you and your system), how specialists view new systems, and what's coming in the near future.

Sort through the software flood

Every month, EASY ACCESS reviews the best of the new software releases in *education, business, home management and entertainment*. You'll learn the important differences between programs that claim to do the same job... we'll tell you how long it will take to master a new, complex program, or if there's a simpler, less expensive program that will do almost as much.

Select only the extra hardware you really need Each issue of EASY ACCESS clearly assesses the avalanche of new add-ons and peripherals. For example, you'll be able to decide the most cost effective way to expand your computer's internal memory... or increase your external storage capacity... or add color or graphics without breaking your budget. And, if

you're not into data bases and networking, we'll show you how to get started.

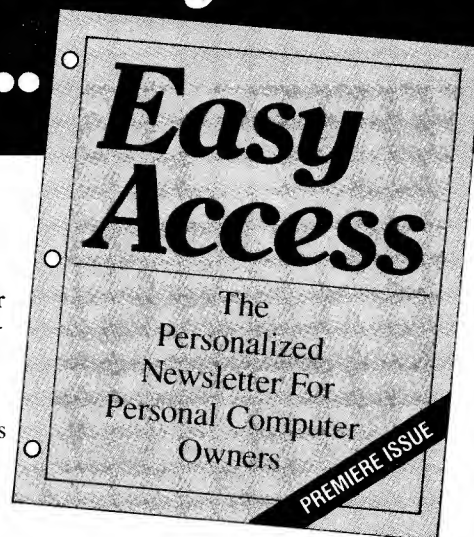
Discover new ways to use your computer Get more value from your computer by letting EASY ACCESS introduce you to new applications you may never have considered. Research confirms that computer owners frequently fail to explore other uses for their system. EASY ACCESS will show you how your whole family can use the computer—for fun, for school, and for chores around the home, as well as for business uses. What's more, EASY ACCESS will tell how how to get the most out of programs you already own.

Save money and be sure before you buy Subscribers may purchase selected products, often at significant savings, simply by dialing a TOLL-FREE number.

EASY ACCESS will also offer a TOLL-FREE INFORMATION LINE because we understand that no review, no matter how thorough, can answer everyone's ques-

tions. The INFORMATION LINE is there for your use before you buy.

Save money too—with your Charter Subscription Above all, EASY ACCESS can save you money. Savings when you avoid the wrong choices in software and hardware... savings when you buy. One year of EASY ACCESS (12 monthly issues) is only \$19.95 if you order now. One wise purchase can save you many times this amount.



CHARTER SUBSCRIPTION OFFER

YES, I want fast, useful information to help me get the most out of my personal computer. Enter my subscription to 1 year of EASY ACCESS (12 issues) at the low Charter Rate of \$19.95. I understand my 3-ring Binder will be sent as soon as payment is received.

Send the EASY ACCESS edition that's written for my computer:

☐ Apple ☐ Commodore ☐ TRS ☐ Other
☐ IBM ☐ Atari ☐ Coleco

My model is

I use my computer for: ☐ Business ☐ Education

☐ Home Management ☐ Games/Entertainment
(You may check more than one)

YOURS FREE!

Permanent Reference Binder

A handsome 3-ring binder will be sent upon receipt of your payment. Use it to keep your issues for reference.

NO-RISK GUARANTEE

If you're ever dissatisfied, just let us know, and we'll send you a full refund on the unexpired portion of your subscription.

Name

Address

City

State

Zip

☐ Payment enclosed
☐ Bill me Later

Charge my: ☐ MasterCard ☐ Visa
☐ American Express credit card

Account No.

Exp. Date

*Send for your
Premiere Issue today!*

© MC 1983

MAIL TO: EASY ACCESS, 201 Lincoln Boulevard, Middlesex, N.J. 08846

053/2005

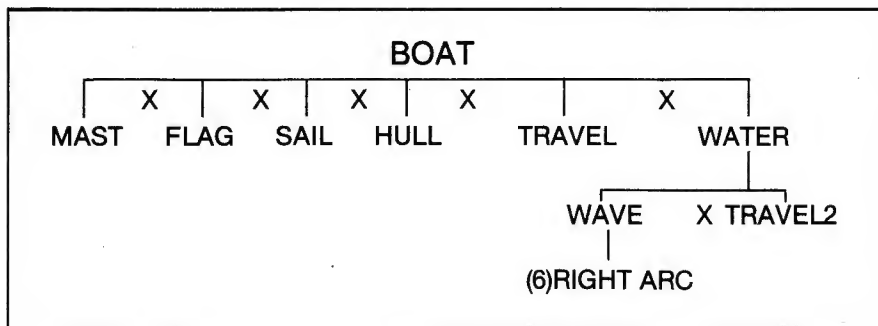


Figure 1.
Procedure tree.

- 1) TRACE allows the user to trace a procedure one line at a time by hitting return when ready for Logo to execute the next line.
- 2) NOTRACE stops TRACE.
- 3) PAUSE, typed into a procedure, stops it at that point and allows the user to type in commands at top level.
- 4) CONTINUE tells the procedure interrupted by PAUSE to continue executing as programmed.

Table. Logo primitives for debugging, specific to the Terrapin and Krell versions of Logo.

TO BOAT	TO HULL
MAST	PC 2
FLAG	RT 120
SAIL	REPEAT 6 [FD 10 RT 10]
HULL	FD 100
TRAVEL	REPEAT 6 [FD 10 RT 10]
WATER	FD 10
END	RT 30
	PC 4
	FD 25
	END
TO MAST	TO TRAVEL
PC 2	PU
BK 30	RT 90
FD 150	FD 227
END	RT 90
	FD 40
TO FLAG	RT 45
PC 4	PD
RT 130	END
FD 20	TO WATER
RT 130	PC 5
FD 20	REPEAT 4 [WAVE TRAVEL2]
END	END
	TO WAVE
TO SAIL	REPEAT 6 [RARC 30 LT 90]
PC 1	END
LT 120	
FD 150	TO TRAVEL2
RT 135	PU
FD 90	LT 135
LT 90	FD 255
PU	RT 90
FD 19	FD 5
RT 90	RT 45
FD 100	PD
RT 180	END
PD	
PC 3	
FD 200	
END	

Program listing. Sailboat.

ter figuring out how to draw MAST, they defined it (Listing 1), then tried the procedure by typing MAST. Instead of a complete mast being drawn on the screen, execution was interrupted with the message THERE IS NO PROCEDURE NAMED 150.

They were puzzled about this message—FORWARD needs an input and 150 had worked previously. First they checked for the obvious. Yes, they were still in Logo because there was a ? with the cursor blinking beside it. Tanya keyboarded FD 150 just to be sure. She expected the turtle to move forward 150 turtle units. Instead, the same puzzling response appeared. She was mystified. Bill took a turn typing in FD 150; the turtle moved forward 150, just as he had expected it would.

What was different? Tanya tried it again: FD 150. While she typed, Bill watched her hands instead of the screen. He saw Tanya type a letter O instead of a zero. Her typing error made all the difference in the world to the computer. They had located the bug by reading the error message that pinpointed the line in their procedure that didn't work and trying to duplicate the bug. They worked carefully, looking for a logical explanation and an answer to the problem. Once found it was a matter of seconds to enter the Edit mode and replace a zero for the O.

Bug Collection

Tanya and Bill's typing error is one of the most common Logo bugs. After trapping their bug, they entered it in their Bug Collection Journal, including both the error message Logo gave them and what they discovered the message meant. Keeping a bug collection and working on classifying the bugs is a real boon to becoming a programmer!

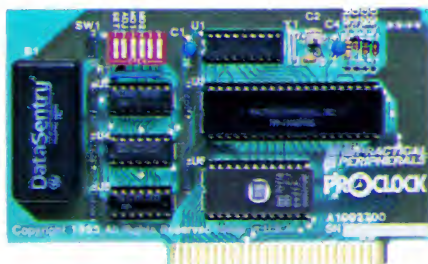
Wave Procedure

Tanya and Bill resumed work. All went smoothly until they began to work out the procedure for waves. They had trouble predicting where to place the turtle before it started drawing each row of waves. Sometimes the waves crisscrossed through the mast. This problem presented a different category of bug to trap—one of the

Continued on p. 84.

A TIMELY ANNOUNCEMENT FOR PRODOSTM USERS:

Congratulations! You not only have a powerful new operating system in Apple's* ProDOS, you can now get an



incredibly versatile Real Time Clock to use with it. PROCLOCKTM.

PROCLOCK is the first Clock/Calendar card designed specifically for Apple's ProDOS. And it couldn't be more versatile or easier to use.

Consider how much money you could save by timing your modem to transmit when the phone rates are cheapest.

And PROCLOCK's powerful interrupt capabilities are invaluable to programmers working with time-sensitive routines and multi-tasking. It can generate interrupts at intervals of 1 millisecond, 1 second, 1 minute, 1 hour, or any combination of those. And all interrupts are software-controlled and handled through PROCLOCK's on-board PIA.

Speaking of software, it's all included right on the compact

card and provides for total compatibility with programs written for the Superclock II, Apple Clock*, and Thunderclock Plus. Far more than any other single clock can offer.

PROCLOCK even includes one feature we don't expect anyone to take advantage of—a 10-year lithium battery that keeps the clock running even if your computer is left off for long periods of time.

But just try to keep away from your Apple long enough to put that to the test! With PROCLOCK, you'll have a whole new world of applications to explore. And plenty of time to explore it. Because PROCLOCK is a reliable, well-built piece of hardware. So well-built, it's backed by a five-year warranty. Come to think of it, that's another feature you're not likely to use!

Ask your dealer about PROCLOCK. It's perfect timing... by design.

Another practical product from Practical Peripherals, Inc. makers of MICROBUFFERTM, PRINTERFACE CARDTM, and GRAPHICARDTM.

**PRACTICAL
PERIPHERALS**

31245 La Baya Drive, Westlake Village, CA 91362
(213) 991-8200 • TWX 910-336-5431

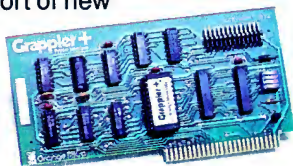
*ProDOS, Apple, and Apple Clock are registered trademarks of Apple Computers, Inc.

Satisfying More Than With Innovation



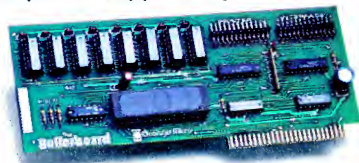
GrapplerTM + Printer Interface

The Original Apple[®] graphics printer interface. Since its introduction three years ago, the Grappler has been imitated by many, but never matched. Now with exclusive features for the Apple IIe and full support of new Epson[®] graphics, the Grappler + remains the most intelligent interface available. Over twenty-seven commands give Apple users full control over any graphics or text on the Apple screen, including a new 80 column text dump. Performance, reliability and support have made the Grappler + the #1 selling intelligent Apple interface.



BufferboardTM For Apples and Printers

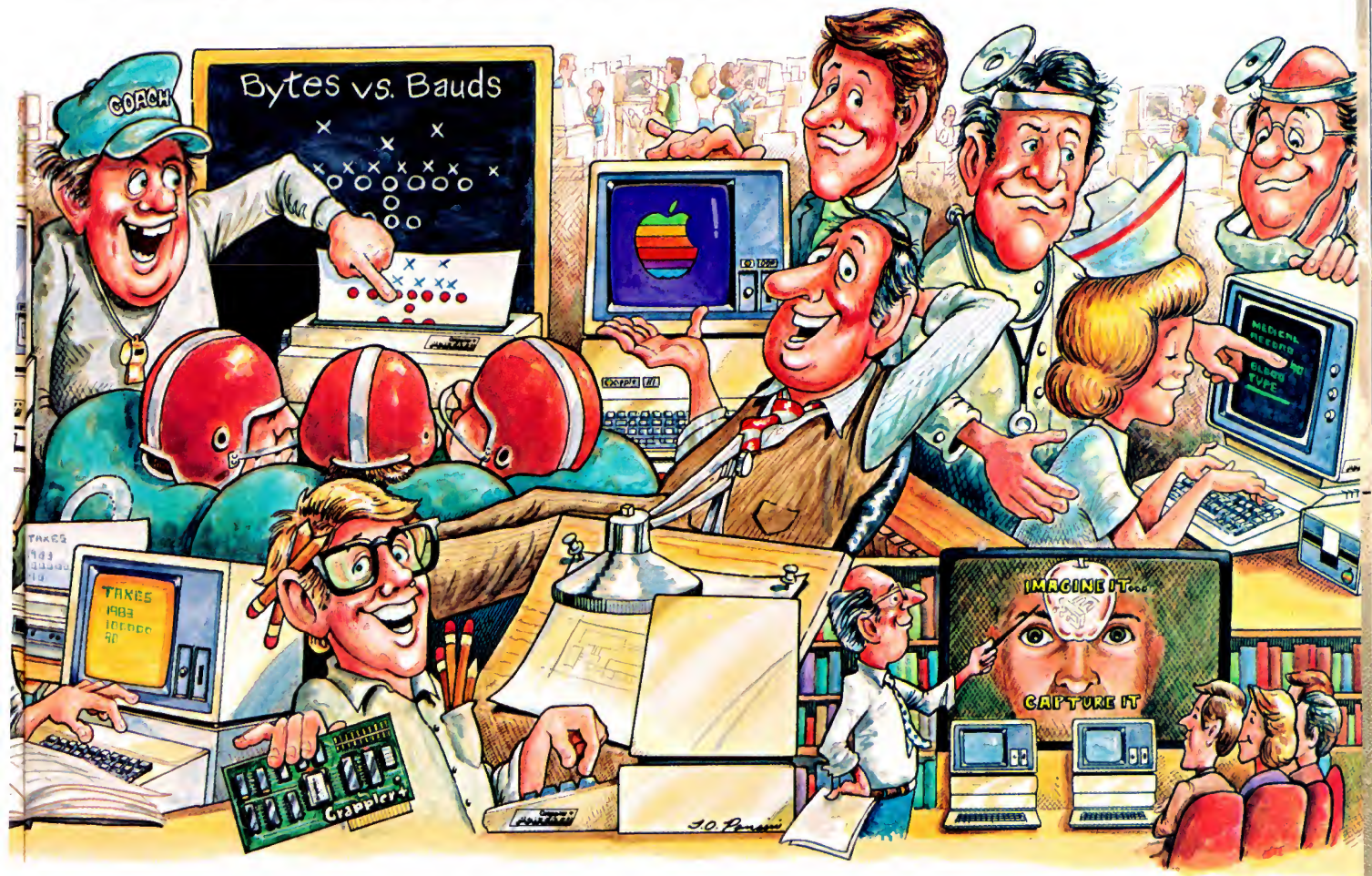
The innovator in "dock-on" printer buffering. The Bufferboard easily adds memory to your current Apple interface system, freeing your computer for additional input. Easily upgradable from 16K, the Bufferboard can store up to 20 pages of text. It fits neatly inside your Apple, "docking" onto your existing printer interface.* No clumsy boxes or cables, no external power supplies...just convenience and economy. With the Bufferboard, you might never wait for your printer again.



* Versions for standard Grappler +, Epson APL and Apple Parallel Interfaces.

135,000 Apple® Owners And Excellence.

Circle 5 on Reader Service card.



BUFFERED Grappler™ +

The most sophisticated buffered Apple printer interface available. The New Buffered Grappler + combines the industry leading features of the Grappler + with the time saving economies of the Bufferboard.**



With this much interface power, you'll never need anything else. And the price will surprise you, too.

**Not available for IDS printers.

Apple is a registered trademark of Apple Computers, Inc.
Epson is a registered trademark of Epson America Inc.

Over 135,000 Apple® computers are using Orange Micro products. Innovation and excellence have made us the #1 manufacturer of intelligent printer interfaces. The top selling Grappler + has become an industry standard, recommended by more software houses and Apple dealers. To meet your growing needs, Orange Micro will continue to introduce new products. Recent innovations include the Grappler + for IDS color printers and the new Orange Interface, with text screen dumps and formatting at a low price. There is an Orange Micro product designed for your application.

For a complete demonstration, see your Apple dealer today.



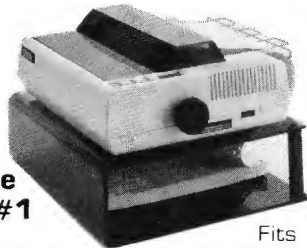
1400 N. Lakeview Ave., Anaheim, CA 92807 U.S.A.
(714) 779-2772 TELEX: 183511 CSMA

©Orange Micro, Inc., 1983

GET ORGANIZED

With Our New Line Of Quality Products

The PR#1



\$29.95

Fits
any printer,
made of 1/4" bronze
acrylic. 16 x 13 x 4

The PR#2 fits larger printers.
Measuring 24 x 13 x 4

For Only **\$34.95**

Both are available with bottom
feed.

Sturdy Bronze Acrylic Copy Holder



\$24.95

Quality Constructed Desk 48" x 24" x 40"



***\$149.90**
+ Freight

Gas Operated
Chair **\$99.99**

5 1/4" Guaranteed BASF

Disks

SS-DD **\$24.50**

SS-QUAD **\$31.50**

DS-DD **\$32.50**

DS-QUAD **\$39.50**

MIDAMERICA WHOLESALE, INC. COMPUTER ACCESSORIES

8135 215th St.
Lakeville, MN 55044

Personal checks allow 2 weeks. We
accept VISA and Master Card.
(Send card number and expiration
date). MN residents add 6% state
sales tax. Prices subject to change
without notice.

TO PLACE ORDERS CALL ANYTIME

1-800-328-2977

MN
residents **612-469-4666**

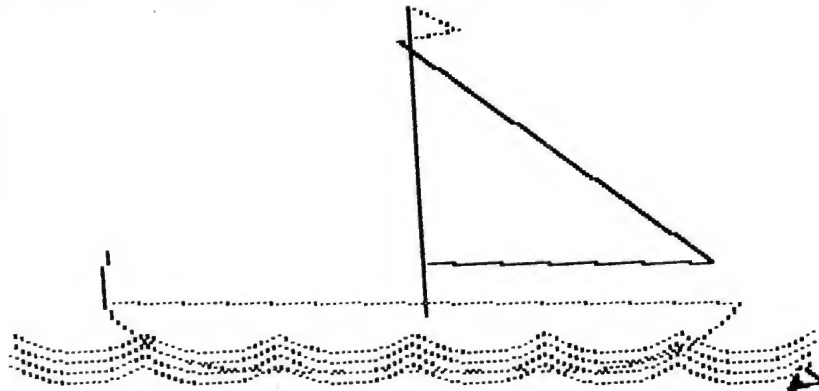


Figure 2. Sailboat printout.

Continued from p. 80.

Turtle State family. In order to solve it, they needed to figure out where the turtle was placed and in which direction it was heading at the end of each line of waves, before telling it to draw the next line.

The Turtle State bug is more subtle than the Typing Error bug. The computer does not give a specific error message to indicate what went wrong. Instead, it demonstrates the error by printing the waves at strange angles across the screen.

Bug Families

Once Tanya and Bill debugged the waves procedure, they entered this bug in their collection. They now had five bug families in their journal.

From previous Logo experiences they had Wrong Mode bugs—usually trapped in the Edit mode when you think you are in Draw mode. They also had the Line Position bug, which happens frequently when you add a stop rule and your procedure doesn't stop. Why? Because it is in the wrong position in the procedure. And there is the repeat/recursion bug. It lives in the last line of a procedure of the same name as the command to be repeated.

There are many other bug families that Tanya and Bill have not yet encountered. In collecting them they will begin to see patterns that will enable them to trap some choice specimens with each encounter.

Error Messages

Terrapin and Krell versions of Logo each have about 28 error messages to help pinpoint bugs. They are written in plain English and experience is needed to interpret their specific meanings, hence the bug collections. The messages are an integral part of the language because debugging is one of the skills taught with this in-

structional computer language. The messages are not there to help adults correct children's programs; they are there for writers of any age and experience to debug their own programs. (Joyce Strong, a teacher at the Oyster River School in Durham, New Hampshire, reports that her first graders, regardless of reading ability, can read their error messages.)

Some examples of the more than two dozen messages are:

YOU DON'T SAY WHAT TO DO WITH ()

() DIDN'T OUTPUT

END SHOULD BE USED ONLY IN THE EDITOR

() IS A LOGO PRIMITIVE

In addition to these phrases, Terrapin/Krell Logo has four commands that are tools specifically designed for program debugging: TRACE, NOTRACE, PAUSE and CONTINUE (Figure 2).

Share Your Bugs

Debugging is a programming skill rather than a nuisance to be avoided. Debugging tools provided within Logo are designed to teach how to correct errors. There is no shame involved in having a bug. Many people feel that examining what doesn't work and figuring out how to correct it is the most important and transferable skill learned at the computer.

Adults must become comfortable with programming bugs and share them with their children or students. This means understanding our own problem-solving strategies and talking about them. It means being with our children when they don't know what's wrong, and supporting them in the process of finding and correcting their errors, in much the same way we support them in learning to tie their own shoes! ■

Apple® à la Modem

\$159.95
a slice

Here's a tasty addition to sweeten your Apple® and put you in touch with the world.

It's an amazing modem called **THE OPERATOR™**.

All of its sophisticated ingredients are tastefully tucked into one single circuit board to offer you the ultimate in simplicity as well as efficiency.

No costly add-ons or external boxes to complicate our easy recipe for instant telecommunications.

Just plug it directly into the slot of your Apple II, II+, IIe, the Franklin Ace® 100 or 1000, or the Basis 108, and you're ready to communicate.

THE OPERATOR comes to you with complete and easy documentation plus start-up software programs on disks.

This system is compatible with: ASCII Express Pro, Data Capture, Modem Magic II, TermExec, Transcend I, II, and III, VisiTerm, Z-Term, and many more.

So top off your Apple with this tempting delight at the very easy to swallow price of \$159.95 for a simple touch of perfection.

THE OPERATOR has these added features:

- 110/300 baud • full & half duplex • auto answer with disconnect • rotary, touch-tone™, key set compatible • totally self-contained (no RS-232 required) • single modem chip reliability • interfaces with most communications packages.

YES, I want to spice up my Apple®
Send Me **THE OPERATOR**.

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____

☐ Check enclosed (\$159.95* each)

For MasterCard and Visa orders only! Call now!

Toll free 1-800-824-7888, ask for Operator 52!

*Mass. residents add 5% sales tax

Shipping and handling included for continental U.S.

The Operator is a trademark of T·I·M·E·C·O·R.

Apple is a registered trademark of Apple Computer, Inc.

Franklin Ace is a trademark of the Franklin Computer Corp.

Touch-Tone is a trademark of American Telephone & Telegraph.

T·I·M·E·C·O·R
REACHING PEOPLE THROUGH TECHNOLOGY

The International Modem Exchange Corporation
P.O. Box 8928, Boston, MA 02114

IC-9

Circle 76 on Reader Service card.

T·I·M·E·C·O·R

REACHING PEOPLE THROUGH TECHNOLOGY

The International Modem Exchange Corporation

Four Longfellow Place, P.O. Box 8928, Boston, MA 02114 Voice: (617) 720-4090 MODEM: (617) 720-3600

For MasterCard & Visa orders only! Call now! Toll free 1-800-824-7888, ask for Operator 52!



SANYO MONITOR SALE!!



9" Data Monitor

- 80 Columns x 24 lines
- Green text display
- Easy to read - no eye strain
- Up front brightness control
- High resolution graphics
- Quick start - no preheating
- Regulated power supply
- Attractive metal cabinet
- UL and FCC approved

- **15 Day Free Trial - 90 Day Immediate Replacement Warranty**

9" Screen - Green Text Display	\$ 79.00
12" Screen - Green Text Display (anti-reflective screen)	\$ 99.00
12" Screen - Amber Text Display (anti-reflective screen)	\$119.00
14" Screen - Color Monitor (national brand)	\$249.00

Display Monitors From Sanyo

With the need for computing power growing every day, Sanyo has stepped in to meet the demand with a whole new line of low cost, high quality data monitors. Designed for commercial and personal computer use. All models come with an array of features, including up-front brightness and contrast controls. The capacity 5 x 7 dot characters as the input is 24 lines of characters with up to 80 characters per line.

Equally important, all are built with Sanyo's commitment to technological excellence. In the world of Audio/Video, Sanyo is synonymous with reliability and performance. And Sanyo quality is reflected in our reputation. Unlike some suppliers, Sanyo designs, manufactures and tests virtually all the parts that go into our products, from cameras to stereos. That's an assurance not everybody can give you!

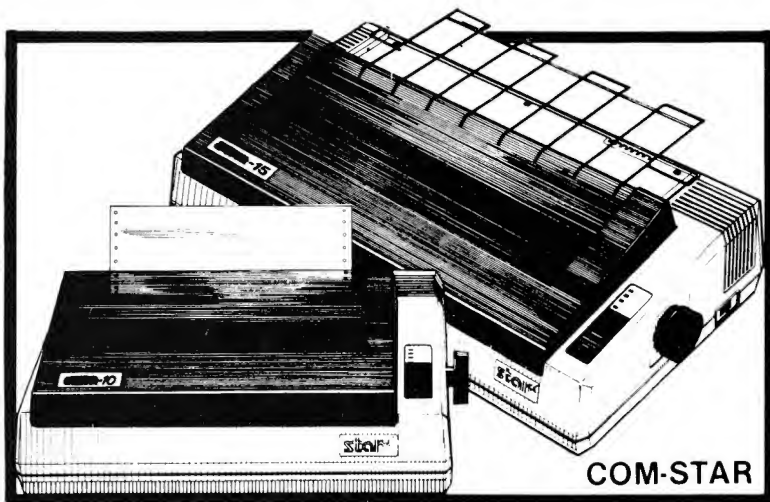


- LOWEST PRICES • 15 DAY FREE TRIAL • 90 DAY FREE REPLACEMENT WARRANTY
- BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL • OVER 500 PROGRAMS • FREE CATALOGS

Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII orders. WE DO NOT EXPORT TO OTHER COUNTRIES.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. Visa - MasterCard - C.O.D.

PROTECTO
ENTERPRIZES (WE LOVE OUR CUSTOMERS)
BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order



FANTASTIC PRINTER SALE

as
low
as
\$149⁰⁰

• **15 Day Free Trial - 180 Day Immediate Replacement Warranty**

80 COLUMN THERMAL PRINTER — 60 CPS

Bi-directional, dot matrix, prints 8½" letter size paper, full 80 columns, high resolution graphics, dot bit addressable, special symbols and true decenders! (Centronics parallel interface)

LIST

\$199

SALE

\$149

80 COLUMN TRACTOR-FRICTION PRINTER — 80 CPS

Bi-directional, dot matrix, impact, prints single sheets, continuous feed paper, adjustable columns, 40 to 132 characters! Roll paper adapter \$32.95. (Serial or Centronics parallel interface)

\$399

\$209

PREMIUM QUALITY 10" CARRIAGE T/F PRINTER — 120 CPS

Bi-directional, impact, 9 x 9 dot matrix with double strike for 18 x 18 dot matrix. High resolution bit image (120 x 144 dot matrix) underlining back spacing, left and right margin settings, true lower decenders, with super and sub scripts. Prints standard, italic, block graphics, special characters, plus 24 of user definable characters and much more!! Prints single sheets, continuous feed and roll paper! (Centronics parallel interface)

\$499

\$289

PREMIUM QUALITY 15½" CARRIAGE PRINTER — 120 CPS

Has all the features of the Premium Quality 10" Carriage T/F Printer above plus a 15½" carriage and more powerful electronic components to handle large business forms! (Centronics parallel interface)

\$599

\$379

HIGH SPEED PREMIUM QUALITY T/F 10" PRINTER — 160 CPS

Save printing time with these plus features: 160 CPS speed, 100% duty cycle, 8K buffer diverse character fonts special symbols and true decenders, vertical and horizontal tabs. This is Red Hot Efficiency!!! (Serial or Centronics parallel interface)

\$699

\$499

HIGH SPEED PREMIUM QUALITY T/F 15½" PRINTER — 160 CPS

Has all the features of the 10" Carriage high speed printer plus a 15½" carriage and more powerful electronics to handle larger business forms! (Serial or Centronics parallel interface)

\$799

\$599

PARALLEL PRINTER INTERFACES: (IN STOCK)

- For VIC-20 and COMMODORE 64 **\$49.00**
- For all APPLE COMPUTERS **\$69.00**
- For ATARI 400 and 800 COMPUTERS **\$79.00**

NOTE: Other printer interfaces are available at computer stores!

WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Canada orders must be in U.S. dollars. We accept Visa and MasterCard. We ship C.O.D.



PROTECTO ENTERPRIZES

(WE LOVE OUR CUSTOMERS)

BOX 550, BARRINGTON, ILLINOIS 60010
Phone 312/382-5244 to order

Load Machine Language and MBasic Together

Here's a quick little trick that enables you to
LOAD an MBasic program and CALL a machine
language subroutine—at the same time.

by Paul M. Danzer

The power of Apple CP/M never ceases to amaze me. Even when the manuals and books don't tell you how, if something is sensible to do, with CP/M you can find a simple way to do it.

The manual that came with my Microsoft Z-80 Softcard mentions an MBasic CALL command for accessing machine language subroutines. Getting the routine into the computer is pretty straightforward, since after you use the ASM and LOAD programs your assembly language subroutine has been transformed into a COM program. Just enter the name of the program (no file type needed), press return and the subroutine is loaded into your machine. The problem begins when you then want to load an MBasic program.

Listing 1 is a PRN listing of a simple program that prints a dollar sign on the monitor. The third line is the usual ORG statement to place the pro-

gram at the beginning of the transient program area (TPA), located at hex 100.

This ORG 100H is necessary for the assembler, ASM, to work, but as a side effect, any other COM program, such as MBASIC.COM, will overwrite your nice little subroutine. After going to the trouble of loading your subroutine into the machine, as soon as you enter MBasic and press return the subroutine is wiped out.

In order to run any program in MBasic, you must first load MBASIC.COM. Therefore, it would appear that the CALL function is worthless—you can't load the subroutine and MBasic simultaneously.

CP/M to the Rescue

Even though your subroutine must have that nasty little ORG statement in it, nothing says it has to refer to 100H. Listing 2 shows the same assembly language program as a sub-

routine (ending with a RET or return). Notice the fourth line of code. There is a second ORG statement, but this one is at 9000H. MBASIC.COM takes up 25,000 bytes at the bottom of the TPA, so assuming a relatively small MBasic program, your subroutine up at 9000H is well out of harm's way.

If you were to run ASMPROG as a COM program, it would do absolutely nothing; the first statement, at 100H, jumps back to 0000H, the address of WBOOT (warmboot). This is the equivalent of returning you to the CP/M command level. But notice the rest of the subroutine is still happily tucked away at 9000H awaiting your call.

The MBasic program in Listing 3 applies this trick. Line 10 prints TEST from the MBasic program. Line 30 calls the assembly language subroutine and displays a dollar sign on the screen. The PRINT statement in line 40 supplies a carriage return and line feed. Finally, line 50 prints IT WORKS from an MBasic statement, proving that you are back at the MBasic command level.

To get this whole thing to work, first type ASMPROG to load the COM file version of the program in Table 2. As noted before, nothing happens

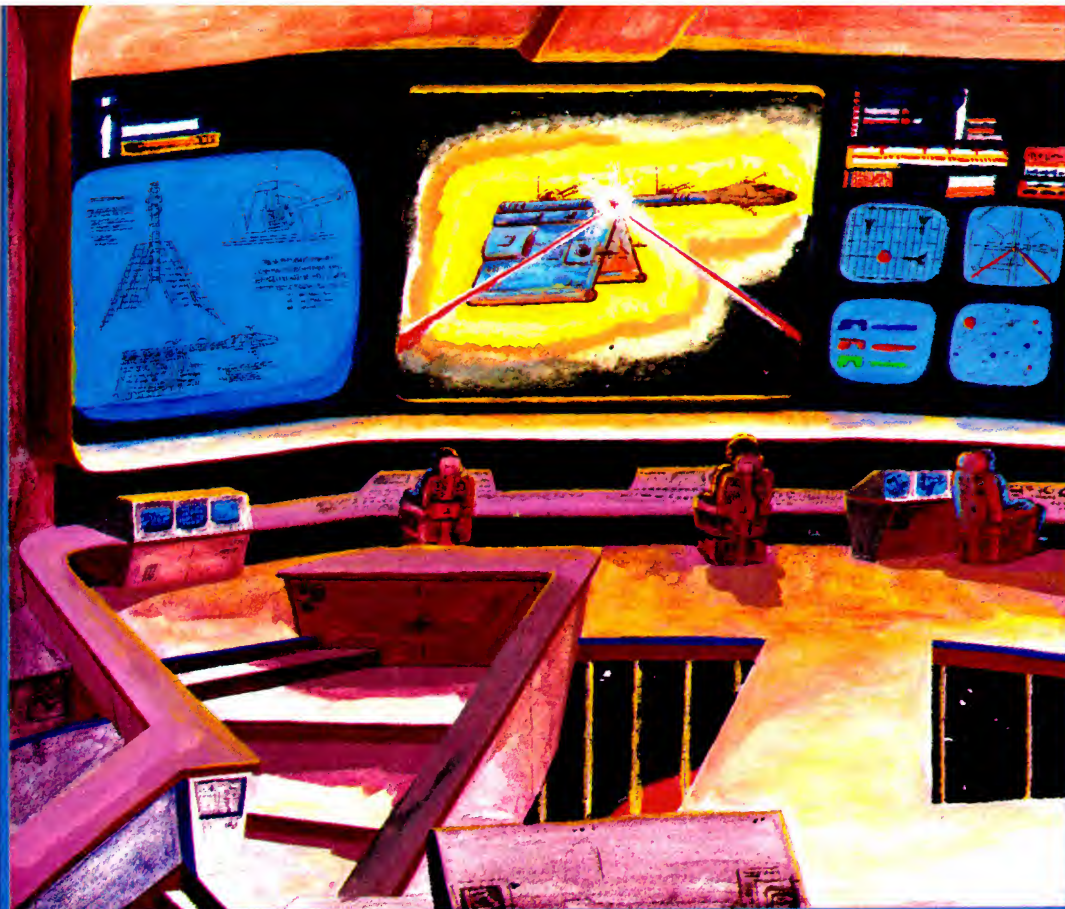
```

0005 =      BDOS  EQU      5
0002 =      WCONF EQU      2
0100      ORG      100H      ;PUTS PROGRAM AT
                                ; START OF TPA
0100 0E02      MVI      C,WCONF ;PLACES DOLLAR
0102 1E24      MVI      E,'$'   ; SIGN ON
0104 CD0500    CALL     BDOS     ; SCREEN
0107 C30000    JMP      0        ;GO TO WARM BOOT
010A          END              ;END ASSEMBLY

```

Listing 1. TEST.PRN.

You can write to Paul Danzer at 2 Dawn Road,
Norwalk, CT 06851.



STAR DESTROYER

By Mitchell Robbins

The Alien Armada came as if from nowhere, striking a terrifying blow to the Federation's star fleet. Only a handful of the newly designed Star Destroyers survived that first attack. And only a very few of them have been fully armed and commissioned. You are the captain of the Star Destroyer "Beowulf". Your mission is to defend the outer border of the Federation from further penetration by the alien attack force. Take up the challenge! Pit your skill against the machine intelligence controlling the enemy ships!

New! Fast 3-D action from the author of "Space Vikings!" 48K Apple® II Plus or Apple® IIe with disk drive and joystick or paddles.

\$39.95 Direct orders, add \$1.50 postage and handling. Specify UPS or First Class Mail. **DEALER INQUIRIES INVITED.**

HYPERSPACE!

Emerge from hyperspace into an enemy sector and the fast action of combat begins! Get ready for the thrills.

FIRE!

An enemy starship is dead in your sights! You maneuver your Star Destroyer in mortal combat and pit your skills against the machine intelligence controlling enemy ships.

STARBASE!

Refuel and complete necessary repairs at your Starbase! Then get ready to return to combat in a new enemy sector.

INCOMING MISSILES!

Move quickly, Commander! You are engaged in 3-D combat by two enemy ships and they are firing at your Star Destroyer.



Circle 154 on Reader Service card.

Harvest Time Software Co.

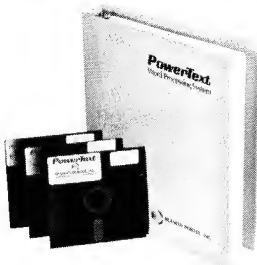
P.O. Box 1527
Jacksonville, Texas 75766
(214) 586-6860

Star Destroyer
© Copyright 1983 by Mitchell Robbins

Apple® II Plus and Apple® IIe are registered trademarks of Apple Computer Inc.

POWERTEXT.

The Word Processing System For Professionals.



All across the nation, PowerText has become the prime word processing system for professionals.

Businesspeople. Writers. Attorneys. Educators. Men and women who demand a level of performance not available from the mass-market word processors.

If you require a true high-performance system, consider PowerText.

Formatting is fully automatic.

PowerText prints the most complex documents—from business letters to dramatic scripts to legal documents packed with footnotes—precisely consistent with the formats you define. You need never worry about printed style as you write. Yet you always get perfectly formatted documents.

It's almost like dictating to your computer.

When you prepare outlines, questionnaires, and reports, PowerText can automatically indent and assign numbers to your paragraphs (Roman or Arabic numerals, or alphanumerics, as you direct.)

There's a full complement of editing features. Including "nested" editing, equivalent to split-screen editing.

You get built-in form letter capability.

Remarkably versatile columnar capabilities.

User-definable function keys.

And far more.

Yet for all its power and sophistication, PowerText is remarkably easy to learn and operate. The system includes an excellent 10-lesson tutorial and a reference manual.

We'll send you complete details.

It is impossible to describe all of PowerText's many valuable features here. But we'll be pleased to send you detailed information, including many samples of actual PowerText output.

Just write us a note, or phone us.

(Or you may wish to send for the tutorial and manual. The cost is \$25. Please indicate which computer you have.)

FOR IBM PC OR XT, OR COMPAQ: \$399

FOR APPLE II OR IIe: \$299

FOR IBM PC OR XT WITH PASCAL

APPLE II or III WITH PASCAL,

OR SAGE: \$199



BEAMAN PORTER, INC.
High Performance Computer Products

Pleasant Ridge Rd., Harrison, NY 10528
(914) 967-3504

```

0000 =          WBOOT      EQU      0
0100                      ORG      100H      ;NEEDED FOR ASM
0100 C30000          JMP      WBOOT      ;RET TO CP/M
9000                      ORG      9000H      ;SUBROUTINE
                                ; STARTS HERE
9000 =          NEXT      EQU      $      ;EQUATES MAKE
0002 =          WCONF     EQU      2      ; SUBROUTINE
0005 =          BDOS      EQU      5      ; SELFSTANDING
9000 0E02          MVI     C,WCONF      ;PLACES DOLLAR
9002 1E24          MVI     E,'$'      ; SIGN ON
9004 CD0500        CALL    BDOS      ; SCREEN
9007 C9            RET              ;RETURN FROM
                                ; CALL
9008                      END              ;END ASSEMBLY

```

Listing 2. ASMPROG.PRN.

```

10      PRINT "TEST"      :REM PUTS "TEST" ON SCREEN
20      ABC = &H9000      :REM ABC IS SUBROUTINE ADDRESS
30      CALL ABC          :REM CALLS SUBROUTINE
40      PRINT             :REM CARRAGE RET/ LINE FEED
50      PRINT "IT WORKS"  :REM BACK TO MBASIC LEVEL
60      END

```

Listing 3. BASPROG.BAS

and you should get the usual CP/M prompt. Next load in the MBasic COM file by typing MBASIC, and finally type RUN "BASPROG.BAS". Assuming there are no problems, you should see the following on your monitor:

```

TEST
$
IT WORKS

```

Now that you know it works, wouldn't it be good to avoid doing all of this manually? Once again, CP/M to the rescue.

Turn a new disk into a system disk by using COPY with the /S option. This command formats the new disk and copies the CP/M system onto it, so it can be booted in drive A by itself. Now, using PIP, copy the following onto this disk as well:

- ASMPROG.COM—first assemble and load the assembly language routine in Table 2.

- MBASIC.COM—from your CP/M master disk.

- BASPROG.BAS—from Table 3.

- SUBMIT.COM—from your CP/M master disk.

Next, using PIP, ED or a word processor, open a file called TOGETHER.SUB. This is a SUBMIT file, and consists of exactly two lines:

```

ASMPROG
MBASIC BASPROG.BAS

```

Now your new disk has the original four programs on it, in addition to TOGETHER.SUB.

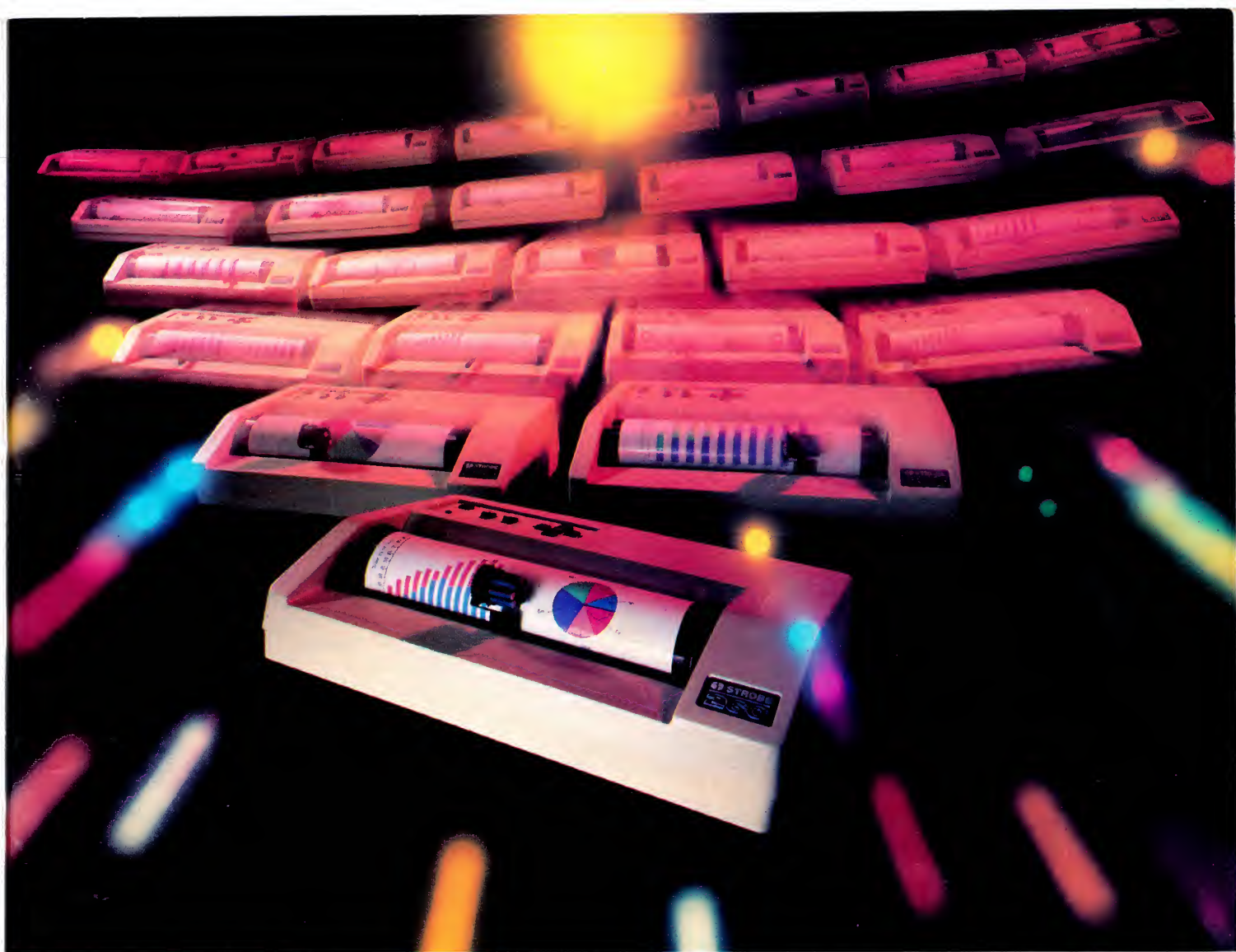
To see the program work, insert

this disk into drive A (it will only work in drive A) and hit control-C for a warm boot. Type SUBMIT TOGETHER and watch the monitor. First you will see the CP/M prompt as the ASMPROG.COM file loads and returns the system to the CP/M command level. Next, with a whirring of the disk, the usual MBasic header of version, copyright and date appears. Finally, the magic TEST, \$, and IT WORKS appear on three separate lines.

There are just two little quirks you should know about. The first, mentioned before, is that it will only work in drive A. Second, since SUBMIT opens a temporary file on the disk, you cannot write protect the disk with a tab over the notch. If you want to write protect the programs, boot your system master disk in drive A, place your new disk in drive B, and type STAT B: *.*\$R/O.

For those who like to be absolutely precise, both a load of pokes (from MBasic) or the CP/M debugger, DDT, could be used to locate a subroutine almost anywhere—but our object is to do it simply, easily, and with a minimum of typing. Now you can place machine language subroutines into your computer at the same time as MBasic programs, so I guess that CALL function under MBasic is useful after all.

What did you say? You want to mix and match subroutines and MBasic programs from the keyboard? Well if you use XSUB... ■



The Best Just Got Better

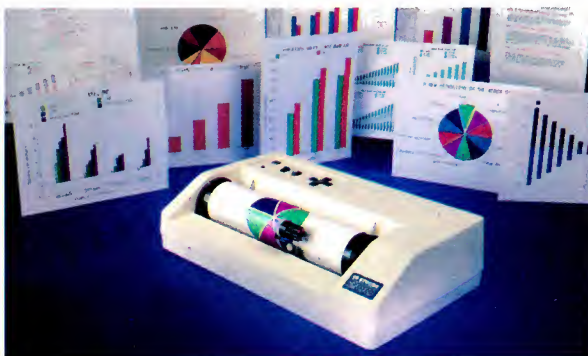
Introducing the new Strobe Models 260 and 200 Graphics Plotters. How do you make the world's most cost-effective graphics system even more remarkable? Simple. Make it easier to use, more powerful, more versatile and more attractive. The hard part is doing all of the above while holding the line on a very affordable price. With the new Models 260 and 200 Graphics Systems, Strobe has done it all. And the benefits are all yours.

The Strobe 260 is the first eight-pen plotter and software package available for under \$1,000. With just a few keystrokes on your computer, the system produces superb high-resolution charts, drawings and transparencies with up to eight automated color breaks. The even more economical Model 200 produces the same wide range of graphics with a single pen which may be changed manually.

The new Strobe plotters interface with virtually every popular microcomputer made today, including the Apple II, IIe and III, Victor, IBM PC, Kaypro

and Osborne systems. What's more, the StrobeWare software programs provide every graphic format you will probably ever need, including multicolor pie charts, bar graphs, line graphs, text processing, and a broad selection of symbols and character styles. To further increase your capabilities, the new Strobe systems also interface with over 40 other popular graphics programs.

Every feature of the new Strobe Graphics System is designed to give you the highest quality graphics quickly, easily and inexpensively. The system also looks very nice on your desk. So visit your local dealer today and see how much better the best can be.



Apple II, IIe and III, Victor, IBM PC, Kaypro and Osborne are trademarks of Apple Computer, Inc., Victor United, Inc., International Business Machines Corporation, Kaypro Corporation, and Osborne Computer Corporation, respectively.



Strobe Inc.
897 5-A Independence Ave.
Mountain View, CA 94043
415/969-5130

The Strobe Graphics System
Seeing is believing

Circle 292 on Reader Service card.

Bent on Business

by Gregory R. Glau

Barring Your Buying

One of the most enjoyable things you can do with your Apple is use its graphics capability. It's true in business or budgeting: A

picture often tells you more than columns and columns of figures.

While the program I offer won't threaten VisiPlot or Trend-Spotter or Apple Business Graphics, it will allow you to draw two sets of bar graphs, each in a different color, that visually represent what those baffling numbers really mean.

Most important in any graph is the impression you get from viewing it. It's not necessary to look at a graph and say, "Yep, that figure represents \$11,314.47 in utility costs." If you want to know that, check the list of figures that make up the graph. What you want to grasp is the *relationship* between the plots on the graph.

Kinds of Graphs

The graph you choose should depend on what you want to learn. Consider bar graphs as glasses all lined up in a row. How full they are gives you the picture you're looking for. The relationships among the numbers is represented by the amount of liquid in our "glasses."

This kind of graph displays relationships of similar numbers. If you spend roughly the same each month on gasoline costs, labor expenses, truck repairs or whatever, all bars should be plotted on the same scale, whether it's in hundreds, thousands or ones.

On another kind of graph, of course, you might want to compare your business sales (in tens-of-thousands of dollars) to your newspaper advertising costs (in hundreds of dollars). You may want to see what your

A.....	Array for the first year's data
A\$.....	Used for GET command
B.....	Array for the second year's data
C.....	Counter for plotting the hash marks up and down the left and right sides of graph
D.....	Used as a divisor to get the entry numbers down to 100 or lower
N.....	Counter for stepping across the screen
Q.....	Input variable for amounts
X.....	Counter, subset for arrays A and B

Table 1. Variables used in the program.

If any entry is the amount in Column A or larger, the program will scale in the increments shown in Column B.

A	B
100,001.....	100,000's
10,001.....	10,000's
1,001.....	1,000's
101.....	100's
11.....	10's

If all numbers are 10 or lower, the program will scale in increments of 1.

If any number is larger than 1,000,000, it will not be accepted. If the largest number is 1,000,000, the program will scale in increments of 100,000.

Table 2. Scaling parameters of the program.

Address correspondence to Gregory R. Glau, PO Box 1627, Prescott, AZ 86302.



Sprite Graphics for Apple™ Computers

3 exciting ways to enter a new galaxy of action and adventure

SPRITE I™

Fast action animation. Smooth and flicker-free. Software included easily lets you create and move sprites and lets you paint colorful backgrounds. Enjoy unique multi-plane action where sprites move freely under and over each other. Sprite I plugs easily into any slot of your Apple computer to give you the excitement and quality of arcade graphics. **\$149.**

SPRITE II™

Add the dramatic dimension of realistic sound effects to all the action in Sprite I. Sound you can easily program yourself. Sound synchronized to the action on the screen. The Sprite II includes a sound generator that lets you create almost any imaginable effect—gunshots, explosions, music, the roar of an engine. **\$249.**

SUPERSPRITE™

The ultimate sprite package. Actual speech, thanks to the amazing ECHO II™ speech synthesizer. The ability to simultaneously join sprite graphics and Apple programs together on the screen. The STARSprite I™ diskette featuring the new Ampersprite language for creating and moving sprites, painting background scenes and programming sound effects. Yes, SuperSprite has it all. Sprites, sound, speech, software. **\$395.**

Circle 10 on Reader Service card.



Syntex Inc.®

10635 N.E. 38th Place
Kirkland, WA 98033
(206) 828-4884

Call 800-426-7412 for your nearest dealer.

™Apple is a registered trademark of Apple Computer, Inc.
™SuperSprite is a registered trademark of Syntex, Inc., 1983

™Starsprite. I is a registered trademark of Avant-Garde Creations, Inc.
™Echo II is a registered trademark of Street Electronics Corp.

Program listing. The Barring Your Buying program.

```

10 GOSUB 5000
15 REM ^^ INSTRUCTIONS
20 DIM A(12): DIM B(12)
30 REM A IS THE 1ST YEAR'S DATA
40 REM B IS THE 2ND YEAR'S DATA
800 HOME : PRINT
805 REM THIS IS
810 REM FOR THE FIRST YEAR'S DATA
820 FOR X = 1 TO 12
830 HOME : VTAB 5
832 PRINT "...ANSWER -1 TO ENTER DATA FOR YEAR 2..."
835 PRINT "THIS IS THE DATA FOR YEAR ";
836 INVERSE : PRINT "ONE": NORMAL
837 PRINT
840 PRINT "PLEASE ENTER THE DATA FOR MONTH"
850 PRINT "NUMBER ";X;: PRINT ":"
860 INPUT A(X)
865 IF A(X) = - 1 THEN 900
867 IF A(X) > 1000000 THEN 840
868 IF A(X) < - 1 THEN 840
870 NEXT X
900 REM THIS IS
910 REM FOR THE SECOND YEAR'S DATA
920 FOR X = 1 TO 12
930 HOME : VTAB 5
935 PRINT "...ANSWER -1 TO TO EXIT...": PRINT
940 PRINT "THIS IS THE DATA FOR YEAR ";
945 INVERSE : PRINT "TWO": NORMAL
950 PRINT
960 PRINT "PLEASE ENTER THE DATA FOR MONTH"
970 PRINT "NUMBER ";X;: PRINT ":"
980 INPUT B(X)
985 IF B(X) = - 1 THEN 1000
987 IF B(X) > 1000000 THEN 960
988 IF B(X) < - 1 THEN 960
990 NEXT X
1000 REM THIS SCALES OUT THE DATA
1002 HOME : PRINT "...WORKING..."
1005 REM LINES 1012 AND 1013 WILL
1006 REM GET RID OF THE -1'S FIRST
1010 REM IF ANY NUMBER IS LARGER THAN 100000 THEN D=10000
1011 FOR X = 1 TO 12
1012 IF A(X) = - 1 THEN A(X) = 0
1013 IF B(X) = - 1 THEN B(X) = 0
1014 IF A(X) > 100000 THEN 1650
1016 IF B(X) > 100000 THEN 1650
1018 NEXT X
1020 REM IF ANY NUMBER IS LARGER THAN 10000 THEN D=1000
1030 FOR X = 1 TO 12
1035 IF A(X) > 10000 THEN 1700
1037 IF B(X) > 10000 THEN 1700
1040 NEXT X
1050 REM IF ANY NUMBER IS LARGER THAN 1000 THEN D=100
1060 FOR X = 1 TO 12
1070 IF A(X) > 1000 THEN 1720
1080 IF B(X) > 1000 THEN 1720
1085 NEXT X
1090 REM IF ANY NUMBER IS LARGER THAN 100 THEN D=10
1100 FOR X = 1 TO 12
1110 IF A(X) > 100 THEN 1740
1120 IF B(X) > 100 THEN 1740
1125 NEXT X
1128 FOR X = 1 TO 12
1130 IF A(X) > 10 THEN 1750
1140 IF B(X) > 10 THEN 1750
1150 NEXT X
1160 REM ALL THE NUMBERS ARE LESS
1170 REM THAN 10
1180 D = .1
1182 S$ = "SCALED BY 1'S"
1190 GOTO 2000
1650 D = 10000
1652 S$ = "SCALED BY 100,000'S"
1660 GOTO 2000
1700 D = 1000
1702 S$ = "SCALED BY 10,000'S"

```

Listing continued.

total labor costs (in thousands) look like related to hours worked (in hundreds)—or compare your total income (in thousands) to your restaurant budget (in tens).

In that kind of comparison, you'd want to see the two plot lines on the same screen, but you'd obviously chart them on two widely different scales. A bar graph probably would not be the best way to view that data, because the scales would vary so much.

So for these purposes, you should use the same scale for both bars. Also, since you want to keep things simple and not run out of room on your Apple screen, you should work with 24 figures—two years' worth of information.

The basic graph should start with January and run through December. You can enter zero for any month where you do not have any data. To help you plot both bars on the same scale, the program includes an automatic scaling feature that scales on the largest number you enter.

If you enter 23 of 24 numbers (12 for each year) under 1,000 and the odd one is 1,245, the program will scale to 1,245 and divide your graph in increments of 1,000. Your 1,245 will show up, but all smaller numbers will not.

This means all of your numbers should be in the same general range, so you get the best possible "picture" of the relationships among the data.

If the program finds that any of your numbers are larger than 100,000, it scales in increments of 100,000. If they're all smaller than 100,000, it looks through them again and checks if any number is larger than 10,000. If so, it scales in increments of 10,000.

This same procedure continues as the program checks to see if any number is larger than 1,000 (if so, it scales in thousands), or 100, or 10. The largest number it will accept is 1,000,000 (it will scale in 100,000 increments then). Table 2 shows exactly where the graph scales.

Since you can change any or all of your numbers, you immediately can see what effect a change in value for

Everybody's making money selling microcomputers. Somebody's going to make money servicing them.

Now NRI Trains You At Home To Make Money Servicing, Repairing, and Programming Personal and Small Business Computers

Seems like every time you turn around, somebody comes along with a new computer for home or business use. And what's made it all possible is the amazing micro-processor, the tiny little chip that's a computer in itself.

Using this new technology, the industry is offering compact, affordable computers that handle things like pay-rolls, billing, inventory, and other jobs for business of every size...perform household functions including budgeting, environmental systems control, indexing recipes. And thousands of hobbyists are already owners, experimenting and developing their own programs.

Growing Demand for Computer Technicians

This is only one of the growth factors influencing the increasing opportunities for qualified computer technicians. The U.S. Department of Labor projects over a 600% increase in job openings for the decade; most of them *new* jobs created by the expanding world of the computer.

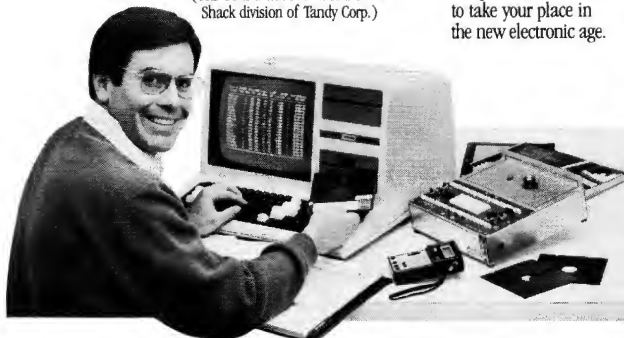
Learn At Home to Service Any Computer

NRI can train you for this exciting, rewarding field. Train you at home to service not only microcomputers, but word processors and data terminals, too. Train you at your convenience, with clearly written "bite-size" lessons that you do evenings or weekends, without going to classes or quitting your present job.

Your training is built around the latest model of the world's most popular computer. It's the amazing TRS-80™ Model 4, now with disk drive and the capabilities and features to perform a host of personal and business functions. No other small computer has so much software available for it, no other is used and relied on by so many people. And it's yours to keep for personal and business use.

You get plenty of practical experience. Under NRI's carefully planned training, you even install a *disk drive* verifying its operation at each step. Using the NRI Discovery Lab® that also comes as part of your course, you build and study circuits ranging from the simplest to the most advanced. You analyze and troubleshoot using the professional 4-function LCD digital multimeter you keep to use later in your work. Then you use the lab and meter to actually access the interior of your computer...build special circuits and write programs to control them. You "see" your computer at work and demonstrate its power.

(TRS-80 is a trademark of the Radio Shack division of Tandy Corp.)



Same Training Available With Color Computer

NRI offers you the opportunity to train with the TRS-80 Color Computer as an alternative to the Model 4. The same technique for getting inside is enhanced by using the new NRI-developed Computer Access Card. Only NRI offers you a choice to fit your specific training needs.

Become the Complete Computer Person

In addition to training in BASIC and advanced machine language, you gain hands-on experience in the operation and application of the latest computers for both business and personal jobs. You're trained to become the fully rounded, new breed of technician who can interface with the operational, programming, and service facets of all of today's computers. You're ready to take your place in the new electronic age.

Other Opportunities

NRI has been giving ambitious people new electronic skills since 1914. Today's offerings also include TV/Audio/Video Systems servicing with training on our exclusive Heath/Zenith computer-programmable 25" diagonal color TV...Industrial Electronics...Design Technology...and other state-of-the-art courses.

The Catalog is Free. The Training is Priceless.

Send the coupon for our 104-page catalog showing all courses with equipment and complete lesson plans. There's no obligation other than to yourself. See how NRI can help you take advantage of the exciting job and earning opportunities in the exploding field of microcomputers. If coupon has been removed, please write to NRI Schools, 3939 Wisconsin Ave., Washington, D.C. 20016.



NRI Schools
McGraw-Hill Continuing
Education Center
3939 Wisconsin Avenue
Washington, D.C. 20016

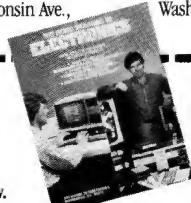
We'll give you tomorrow.

The catalog is free. The training is priceless.

Please check for one free catalog only.

- ☐ Computer Electronics including Microcomputers
- ☐ Color TV, Audio, and Video System Servicing
- ☐ Electronics Design Technology
- ☐ Digital Electronics
- ☐ Communications Electronics • FCC Licenses • Mobile CB • Aircraft • Marine

- ☐ Industrial Electronics
- ☐ Basic Electronics
- ☐ Small Engine Servicing
- ☐ Appliance Servicing
- ☐ Automotive Servicing
- ☐ Auto Air Conditioning
- ☐ Air Conditioning, Heating, Refrigeration, & Solar Technology
- ☐ Building Construction



All career courses
approved under GI bill.
☐ Check for details

195-024

Name _____ (Please Print) _____ Age _____

Street _____

City/State/Zip _____

Accredited by the Accrediting Commission of the National Home Study Council

Listing continued.

```

1710 GOTO 2000
1720 D = 100
1722 S$ = "SCALED BY 1,000'S"
1730 GOTO 2000
1740 D = 10
1742 S$ = "SCALED BY 100'S"
1745 GOTO 2000
1750 D = 1
1752 S$ = "SCALED BY 10'S"
1760 GOTO 2000
2000 REM NOW WE HAVE TO DIVIDE TO GET THE SCALE RIGHT
2010 REM ALL NUMBERS COME HERE LESS THAN 100
2030 REM NOW WE HAVE TO REDUCE ALL NUMBERS
2040 REM TO LESS THAN 40% OF THEIR CURRENT
2050 REM TO FIT THE APPLE SCREEN
2060 FOR X = 1 TO 12
2070 A(X) = A(X) / D
2080 B(X) = B(X) / D
2090 NEXT X
2100 FOR X = 1 TO 12
2110 A(X) = A(X) * .39
2120 B(X) = B(X) * .39
2130 NEXT X
3000 REM THIS DRAWS THE GRAPH
3005 X = 1
3010 GR
3020 COLOR= 6
3030 FOR N = 2 TO 36 STEP 3
3040 VLIN 40 - A(X),40 AT N
3050 X = X + 1
3060 NEXT N
3070 REM DRAW 2ND YEAR'S DATA
3080 COLOR= 10
3085 X = 1
3090 FOR N = 3 TO 37 STEP 3
3100 VLIN 40 - B(X),40 AT N
3110 X = X + 1
3120 NEXT N
3200 FOR C = 0 TO 40 STEP 4
3210 PLOT 0,C
3220 PLOT 30,C
3230 NEXT C
3400 PRINT " J F M A M J J A S O N D"
3450 PRINT "1ST YEAR DATA IS ON THE LEFT SIDE."
3500 PRINT "THIS GRAPH IS ";S$;"."
3510 PRINT "HIT ANY KEY TO CONTINUE...";: GET A$
3530 TEXT
3535 HOME
3536 PRINT : PRINT "...WORKING..."
3540 FOR X = 1 TO 12
3550 A(X) = A(X) / .39
3560 A(X) = A(X) * D
3670 B(X) = B(X) / .39
3680 B(X) = B(X) * D
3685 NEXT X
3690 REM ^^ TO GET BACK TO THE APPROXIMATE STARTING FIGURES
3700 GOTO 4000
4000 REM :CORRECTION AREA
4010 HOME : PRINT
4020 PRINT "HERE IS THE FIRST YEAR'S DATA:"
4030 PRINT
4040 PRINT "MONTH","AMOUNT"
4050 FOR X = 1 TO 12
4060 PRINT X,A(X)
4070 NEXT X
4080 PRINT
4090 PRINT "ANSWER THE ITEM NUMBER TO"
4100 PRINT "CHANGE IT, 0 TO CONTINUE, OR"
4105 PRINT "-1 TO STOP THE PROGRAM NOW:"
4110 INPUT Q
4115 IF Q = - 1 THEN PRINT "END OF PROGRAM": END
4120 IF Q < - 1 THEN 4000
4130 IF Q > 12 THEN 4000
4140 IF Q = 0 THEN 4200
4150 PRINT
4160 PRINT "ENTER THE CORRECT AMOUNT FOR ITEM"
4170 PRINT Q;" ";: INPUT A(Q)
4175 IF A(Q) > 1000000 THEN GOSUB 4500
4177 IF A(Q) < 0 THEN A(Q) = 0
4180 GOTO 4000
4200 HOME : PRINT
4210 PRINT "HERE IS THE SECOND YEAR'S DATA:"

```

Listing continued.

any entry (or entries) makes on your graph. Unfortunately, you cannot save the information, or load data from disk and then graph it. The program is designed to let you enter numbers from the keyboard, and let you change them if you wish.

The Program

Enough about theory and program design; let's run through the system.

The first line, 10, sends you to line 5000 where you have two pages of instructions. You're then returned to line 20, which dimensions the two single-dimension arrays the program uses—A for the first year's data, and B for the second year's.

You must enter the information for the first year. If you only have six months' worth of information, don't keep entering zeroes for the blank data—enter -1 to exit the first year entry section and move to the second year's part.

If you enter any other negative number, the program will ask again for the same month's data. It isn't designed to graph down from zero, so it will not accept a negative entry.

The program section from 800-870 also checks if your entries are larger than 1,000,000; if so, it asks again. Lines 900-990 perform the same functions for the second year's information. This time though, -1 will move you to the scaling part of the program.

Once you've completed data entry for year two (by answering all 12 entry points, or -1 to tell the program you have no more data), go to line 1000.

Lines 1000-1190 clear the screen, display ...WORKING... so you'll know something is happening, and begin the scaling process. Here the program reads through your numbers and based on the largest one, determines the proper scale. You're then sent to lines 1650-1760 where the variable D is assigned a value based on the largest number you entered.

Because of the Apple screen's limits and the fact that for speed we use lo-res graphics, we have only 40 plotting

YOUR SPREADSHEETS CAN LOOK PERFECT AND STILL BE WRONG.

You know how it is.

You spend hours building up a spreadsheet. Inserting data. Changing figures. Adding new formulas suggested by others.

When you're finished, everything looks perfect. But is it?

Are those totals really right?

What formulas produced that bottom line?

Is it out? And if so, *by how much?*

The only way to be sure.

If you use VisiCalc®, Lotus™ 1-2-3* or SuperCalc™, you need The Spreadsheet AUDITOR.

Why? Because only the AUDITOR allows you to quickly and simply print out every formula in your spreadsheet.

Formulas are displayed in a two-dimensional grid that matches the layout of your spreadsheet exactly.

Coordinates are printed. Pages are numbered.

So you can refer to any section instantly — identify changing patterns — and spot errors or omissions, *without* having to move your cursor from cell to cell.

For Lotus users, the AUDITOR even provides a complete listing of all named and special ranges.

Quick, simple, sure.

You don't have to waste time altering column widths. Or worry about clipping important formulas.

The AUDITOR scales columns automatically.

It gives you the option of wrapping long formulas into manageable columns that are easy to read.

A permanent record.

The AUDITOR allows you to document any spreadsheet, and create a permanent record.

It lets you examine the logic behind spreadsheets "handed down" by previous users.

And generates formats that can be followed by other users later.

Other company benefits.

In companies where several people are using spreadsheets, a series of listings can grow to become an application's library.

The AUDITOR makes sure everyone knows what spreadsheets have been developed, so no-one wastes time reinventing the wheel.

The perfect teaching tool.

The AUDITOR helps new users to learn spreadsheet building techniques quickly because it displays the formulas behind the numbers.

Printouts also show what formulas to type into any given grid location.

Put the Auditor on your side.

If you're making responsible financial or corporate decisions based on spreadsheets, you can't afford to be without the AUDITOR one more day.

A small price to pay

Best of all the AUDITOR costs just \$99.

And that's a small price to pay for spreadsheets you *know* are right.

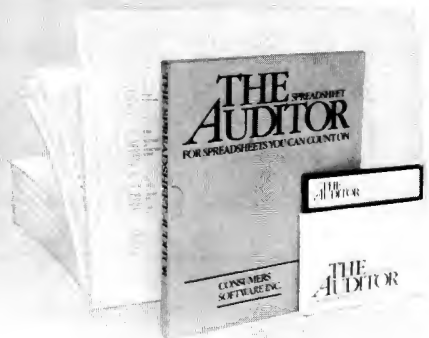
For more information: contact Consumers Software at (604) 688-4548 (Dealer enquiries welcome.)

To order your copy.

Enclose cheque or money order for \$99 and mail to:
Consumers Software Inc.
Dept. D, Ste. 106, 314 East Holly Street
Bellingham, Wa. 98225
or, call 800-645-5501 toll-free.
(We accept Visa and Master Card.)
Please specify whether you have an IBM/PC or an Apple II or Iie.

™ Signifies manufacturers' trademarks.

® Signifies manufacturers' registered trademark.



THE SPREADSHEET AUDITOR™

FOR SPREADSHEETS YOU CAN COUNT ON

Listing continued.

```

4220 PRINT
4230 PRINT "MONTH","AMOUNT"
4240 FOR X = 1 TO 12
4250 PRINT X,B(X)
4260 NEXT X
4270 PRINT
4280 PRINT "ANSWER THE ITEM NUMBER TO"
4290 PRINT "CHANGE IT, 0 TO CONTINUE, OR"
4295 PRINT "-1 TO STOP THE PROGRAM NOW:"
4300 INPUT Q
4305 IF Q = - 1 THEN PRINT "END OF PROGRAM": END
4310 IF Q < - 1 THEN 4200
4320 IF Q > 12 THEN 4200
4325 IF Q = 0 THEN 4400
4330 PRINT
4340 PRINT "ENTER THE CORRECT AMOUNT FOR ITEM"
4350 PRINT Q;" ";: INPUT B(Q)
4355 IF B(Q) > 1000000 THEN GOSUB 4600
4357 IF B(Q) < 0 THEN B(Q) = 0
4360 GOTO 4200
4400 REM ALL DATA IS CORRECT
4405 HOME : PRINT : PRINT "...WORKING..."
4410 GOTO 1000
4500 HOME : VTAB 5
4510 PRINT "SORRY, THE LARGEST FIGURE CAN'T"
4520 PRINT "BE ANY BIGGER THAN 1,000,000"
4530 PRINT
4532 PRINT "THIS WILL AUTOMATICALLY ZERO OUT"
4534 PRINT "THE INCORRECT ENTRY (";Q;")": PRINT
4540 PRINT "HIT ANY KEY TO CONTINUE..."
4550 A(Q) = 0
4560 GET A$
4570 RETURN
4600 HOME : VTAB 5
4610 PRINT "SORRY, THE LARGEST FIGURE CAN'T"
4620 PRINT "BE ANY BIGGER THAN 1,000,000"
4630 PRINT
4635 PRINT "THIS WILL AUTOMATICALLY ZERO OUT"
4637 PRINT "THE INCORRECT ENTRY (";Q;")": PRINT
4640 PRINT "HIT ANY KEY TO CONTINUE..."
4650 B(Q) = 0
4660 GET A$
4670 RETURN
5000 HOME : PRINT
5010 PRINT "THIS PROGRAM WILL CREATE BAR"
5020 PRINT "GRAPHS FOR TWO SETS OF DATA, WITH"
5030 PRINT "UP TO 12 ENTRIES IN EACH SET."
5040 PRINT
5050 PRINT "IT'S DESIGNED TO DISPLAY OVER A"
5060 PRINT "ONE YEAR PERIOD, STARTING IN JANUARY"
5070 PRINT "AND RUNNING THROUGH DECEMBER."
5080 PRINT
5090 PRINT "HOWEVER, YOU CAN ENTER ZERO FOR THOSE"
5100 PRINT "MONTHS IN WHICH YOU DO NOT HAVE ANY"
5110 PRINT "INFORMATION."
5120 PRINT
5130 PRINT "YOU CAN MOVE FROM THE FIRST YEAR'S"
5140 PRINT "DATA TO THE SECOND YEAR'S BY ANSWERING"
5150 PRINT "-1, AS THE DISPLAY WILL TELL YOU."
5160 PRINT
5170 PRINT "HIT ANY KEY TO CONTINUE..."
5180 GET A$
5200 HOME : PRINT
5210 PRINT "YOU'LL ALSO HAVE THE CHANCE TO CORRECT"
5220 PRINT "YOUR FIGURES AFTER YOU SEE THE FIRST"
5230 PRINT "GRAPH, IF YOU WISH."
5240 PRINT
5250 PRINT "REMEMBER THAT THE SYSTEM WILL SCALE"
5260 PRINT "TO YOUR LARGEST FIGURE. SO, IF YOU "
5270 PRINT "HAVE MOST OF YOUR NUMBERS LESS THAN"
5280 PRINT "1,000, BUT HAVE ONE OR MORE OVER"
5290 PRINT "THAT 1,000 FIGURE, THE GRAPH WILL"
5300 PRINT "SCALE TO THE LARGER AMOUNT."
5310 PRINT
5312 PRINT "THE GRAPH SCALES IN INCREMENTS ON"
5314 PRINT "1, 10, 100, 1000, AND 10,000."
5316 PRINT
5320 PRINT "THE LARGEST NUMBER THE SYSTEM WILL"
5330 PRINT "ACCEPT IS 1,000,000. IT WILL NOT"
5340 PRINT "ACCEPT A NEGATIVE FIGURE FOR AN ENTRY."
5400 PRINT : PRINT "HIT ANY KEY TO CONTINUE..."
5410 GET A$
5600 RETURN

```

points available. This would be simple if all the numbers you might enter were less than 40. But to accommodate information for graphing we must divide the entries by a suitable number to a size that will fit on the screen.

To do this, the Apple divides a number into all of your entries to get them all down to 100 or lower, but still makes sure they maintain their relative value. Thus, an entry of 15000 would be divided by 1000 and end up as 15. An entry of 13000 also would be divided by 1000, and so would end up as 13. The numbers are much smaller, but their *relationship* is preserved by the variable D.

Remember that D was set according to the largest number you entered. Lines 2000-2090 divide your numbers by D. This converts them all to 100 or lower. It keeps things neat.

But we only have 40 spaces up-and-down on which to plot our information. This means we must *decrease* all of our numbers to less than 40 percent of their current value. Since they all are less than 100, lines 2100-2130 multiply all the numbers by .39, to decrease their size so they'll fit properly on your Apple screen.

Creating the Graph

Now you're ready to create your graph display; lines 3000-3510 do just that. Line 3005 sets X to one, as it will be used as a counter. Line 3010 puts you into the lo-res graphics mode with the GR command.

Line 3030 sets up a loop that controls the plotting points as you move across the graph. It starts at 2 and moves across in steps of 3. When you plot the second year's data (starting at line 3070), a similar loop will start at 3 and move across, still stepping at intervals of 3. This compiles January's data. The plot for the first year will be adjacent to that of the second year's numbers. Then there will be a blank space, and then February's figures start across the screen.

The basic plotting lines (3040 and 3100) draw a vertical line (VLIN) from 40 (the top of your screen) minus the value for the month, to 40, the bottom line of your graph.

CHARTER OFFER
SAVE \$2.00 OFF THE BASIC RATE!



THESE COULD BE THE KEYS TO YOUR FUTURE

Unlock *all* the potential of your Commodore 64 and VIC-20* with **RUN**.

Explore... Experiment... Enjoy... Beginner and expert alike will be taken beyond the manual to the limits of their abilities. Enter your own game programs. Construct a simple hardware add-on. Broaden your scope with unique applications... And... get a 13th issue **FREE!**

Enjoy key features like these:

- Games for fun & strategy.
- Programming tips help you learn short cuts.
- Candid reviews help you make money-saving decisions.
- Programs to add to your library.
- Instructions & tutorials to increase your skills.
- Hardware & software modifications help your machine work smart.
- Unique applications broaden your scope.

Here's a system-specific magazine written with you in mind. Written by and for the reader to give time-saving, money-saving hints. You'll get instructions and tutorials to increase your skills, and candid reviews to help you make the right decisions. Most of all though, you'll have fun.



Commodore 64 and VIC-20 owners are one of the largest groups of computerists today. Enjoy the benefits of this with your own magazine. Be in control like never before. Order **RUN** today and get a 13th issue free with your prepaid order (check or credit card) of only \$17.97. Send in the coupon or call toll free 1-800-258-5473. In N.H. call 1-924-9471.

Send me a subscription to **RUN** for only \$17.97 per year. I understand that with payment enclosed or credit card order I will receive a **FREE** issue making a total of 13 issues for \$17.97. Save \$2.00 off the basic rate!

☐ CHECK/MO ☐ MC ☐ AE ☐ VISA ☐ BILL ME

card # _____ exp. date _____

signature _____

name _____

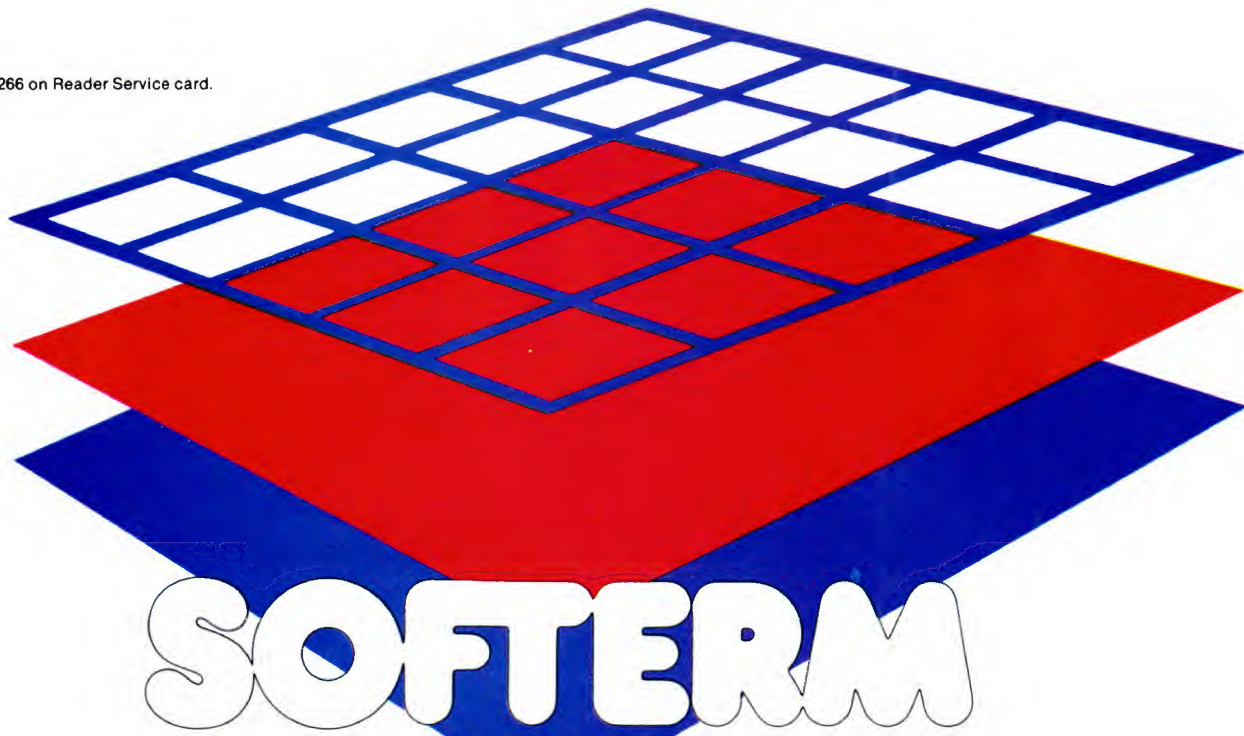
address _____

city _____ state _____ zip _____

Canada & Mexico \$20.97; Foreign Surface \$37.97, 1 year only, US funds drawn on US bank. Foreign airmail, please inquire. Please allow 6 to 8 weeks for delivery.

RUN • Box 954 • Farmingdale, NY 11737

342F5



DOS, CP/M,® PASCAL

The only communications software you'll ever need!

Softterm 1

The Complete, Upgradeable Package for Home or Business Use

Softterm 1 is a powerful and flexible terminal emulation program that operates on an Apple® II, II Plus, or IIe to provide basic terminal communications to a variety of host computers, timesharing services, and information services such as *The Source*™, *CompuServe*®, and the *Dow Jones News/Retrieval*®. It operates full or half-duplex at speeds up to 9600 bps using either a direct connection or any standard manual or auto-dial modem. Features include user-defined keyboard macros, built-in phone book for automatic dialing, terminal mode line capture simultaneously to print or disk, copy screen to print or disk, and terminal status display.

DOS, CP/M, and PASCAL

File Compatibility Combined In a Single Program

Softterm 1 incorporates an advanced file manager which provides compatibility with DOS 3.3, CP/M, and Pascal disk formats for all file operations including file transfers. And at speeds up to 5 times faster than standard Apple DOS! Built-in disk utilities provide *INIT*, *CATALOG*, *RENAME*, and *DELETE* commands for all disk formats. Wildcard match characters can be used whenever filenames are entered.

Local file transfers allow DOS, CP/M, or Pascal files to be displayed, printed, or even copied to another disk. For example, a file on a CP/M formatted disk in Drive 1 could be copied to a Pascal formatted disk in Drive 2 providing a complete format conversion capability. Numerous editing options such as tab expansion and removing unwanted characters allow easy reformatting of data to accommodate the variations in data formats used by host computers.

Multi-Protocol

File Transfer Capability

Softterm 1 offers file transfer methods flexible enough to match any host computer requirement. These include the *character* protocol with user-definable characteristics to provide maximum flexibility for text file transfers to any computer. The CP/M User's Group standard *XMODEM* protocol may be used for binary file transfers with systems using the CP/M operating system. The intelligent *Softtrans* protocol can be used to transfer *any* type file and provides automatic binary encoding and decoding, error detection and automatic retransmission, and data compression to enhance line utilization. A FORTRAN 77 source program is supplied with Softterm 1 which is easily adaptable to any host computer to allow communications with Softterm using the *Softtrans* protocol. Specific host computer versions of the *Softtrans* FORTRAN program are available on request.

Softterm file transfer utilizes an easy to use *command language* which may be executed interactively or from a *macro* command file which has been previously entered and saved on disk. Twenty-three high-level commands include *DIAL*, *CATALOG*, *SEND*, *RECEIVE*, *ONERR*, *MONITOR*, *HANGUP*, and others. A *SCHEDULE* command even allows file transfers at a specific date and time.

Softterm 2

The "Choice of Professionals"

Softterm 2 includes all features of Softterm 1 and provides an *exact* terminal emulation for a wide range of conversational and block mode CRT terminals. Special function keys, sophisticated editing features, even local printer capabilities of the terminals emulated are fully supported. In fact, your host computer won't know the difference! All of the following emulations are included in Softterm 2 and the list is growing...

ADDs Regent 20, 25, 40, 60 • ADDs Viewpoint • Data General D200 • Datapoint 3601 • DEC VT102 • VT52 • Hazeltine 1400, 1410, 1500, 1520 • Honeywell VIP7205 • IBM 3101 Model 10 and 20 • Lear Siegler ADM-3A, ADM-5 • TeleVideo 910, 925

You'll Never Outgrow It

For the latest program enhancements, you can access the Softronics Online Update Service 24 hours a day, 7 days a week. New hardware support or terminal emulations are immediately available to all Softterm users.

Softterm 1—\$135

Softterm 2—\$195

Available now from your local dealer or Softronics Inc.

*Apple is a registered trademark of Apple Computer, Inc.. CP/M is a registered trademark of Digital Research, Inc.. Dow Jones News/Retrieval is a registered trademark of Dow Jones, Inc.. The Source is a service mark of Source Telecomputing Corporation. CompuServe is a registered trademark of CompuServe, Inc.



SOFTRONICS

6626 Prince Edward, Memphis, TN 38119, 901-683-6850

So if your first number is 15, the plotting lines would draw a vertical line from 25 (which is 40 minus 15) down to 40 (the bottom of the graph area). If your second number was 23, the program would draw a line from 17 (which is 40 minus 23) down to 40.

This method keeps the integrity of your numbers correct; the larger the number, the higher up on the screen that particular line goes.

This method—deducting your figure from the highest point available—keeps the graph right side up. Otherwise, all the numbers would extend down nicely from the top of your screen.

Lines 3030 and 3090 tell the program where on the screen to plot each line, going left to right; there are 40 points *across* the screen, too. Line 3030 starts its plot at space #2 for January of the first year. Line 3090 starts its plot at space #3, placing the data

from January of the second year next to the data from the first year. Both lines step by three. This gives you the two plots for each month followed by a blank space.

As the program goes through this sequence, it draws your graph. It also shows the scale, and puts hash marks up both sides.

These only *approximate* the exact figures because each graph created in lo-res uses a number of pixels (screen dots for each "plot" on the graph) and so is not perfectly true to scale. But keep in mind the graph's purpose is not to see exact amounts, but rather to get a picture of your information.

Lines 3510-3700 convert the display back to text and converts your numbers back to their original size.

Remember that if you started with a number of 1500 and the graph was scaled in thousands, it would be converted immediately to 15. Then, to

fit on your screen, that 15 was multiplied by .39, and so the number that is actually plotted is $(1500/100) \times .39$, or 5.85. A starting entry of 1980 would be plotted as $(1980/100) \times .39$, 7.72.

The relationship between 1500 and 1980 is exactly the same as it is between 5.85 and 7.72. However, you really don't have to be concerned with all this math—the program will do it automatically for you.

When this process is reversed, your numbers are reconverted in lines 3510-3700 to display your original figures, so you can correct or change them. This is vital. You wouldn't want to enter that 1980 value as, for instance, the kilowatt hours of electricity your business used in a month, and then view it for correction purposes as 7.72!

Once you make corrections or changes, the numbers again are

Circle 26 on Reader Service card.

][+ or //e



**And now for
Apple ///**

YOUR KEY TO PROFESSIONAL WORD PROCESSING

P **owerful:** All the standard goodies: find, replace, move, save/insert sections. Glossary function for quick entry of commonly used phrases. Form letter (mail merge) built in. File chaining for long documents. Standard text files link to spelling checkers and databases. Printer spooling -- print one chapter while you type the next -- using RAM card or //e Auxiliary Memory.

R **eliable:** Three years of sales and user support. No surprises. No "death in the night."

O **ptions:** ZIP-COMM communications package fits inside Zardax to send or receive text easily. \$80.

V **ersatile:** Over 40 printers and many interface cards supported. You can create or modify printer files if needed. Twelve][+ 80 column cards, plus //e text and Auxiliary Memory cards. Also works in 40 columns. Free and copyable Utilities disk available from dealers adds new devices and features as they become available.

E **asy:** Editing commands are easy to remember and teach. Two menus for disk operations and printing. Built-in print formatting commands so you don't have to mess with escape or control codes.

N **ew for the Apple ///:** More power and features at the same price -- \$210. Text files up to 197K load from ProFile in under 11 seconds. Commands compatible with][+ and //e versions.

Just push our button - -

Dealer inquiries invited.

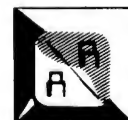
Apple][+, //e and ///, c. Apple Computer, Inc.

Action-Research Northwest

11442 Marine View Drive, SW.

Seattle, WA 98146

(206) 241-1645 Source: CL2542



checked to reset the scale if needed, divided by the variable D to get them all down to 100 or lower, and multiplied by .39 so they'll fit on your screen.

Lines 4000-4410 let you change any of your numbers. They connect to two subroutines, 4500 and 4600, which inform you if any entry is larger than 1,000,000, and then ask again. These subroutines will zero-out any entry you make larger than that one-million figure; the plotting routine won't graph that large a number.

This correction area lets you adjust your data and then see what effect these changes have on your bar graph.

Unless you tell the program to stop (with -1), you're in a continuous loop. You see the graph of your data, then you can change any or all of it, and then you're back to the graph

again.

That's the whole story. It seems more complex on paper than it is. The program is self-prompting and lets you exit on every level.

By the way, if you read through the instructions a time or two and don't want to take the time to type them into the program, it won't hurt anything. Just be sure you eliminate line 10, as well as all lines from 5000 on.

Bar Room

Twenty-four items of information—two year's worth—is all that fits on the screen with lo-res plotting. Hi-res gives you more room for information, but is much slower to create bar graphs. There's no spot for a "title," since all information is entered just before you view the graph. You'll know what you're working on.

Since the program won't SAVE or

LOAD data from a text file, why not interface one? You can LOAD your data directly into arrays A and B and let the program plot.

What do you think of moving the zero line so the program can plot negative numbers, too? You could.

Why not change the program to plot your data cumulatively? Then if you were plotting, for example, your electricity or gas usage (or dollars spent), you could see the total amount as the year goes along. It would give you an entirely different picture, but with the same information and scaling and plotting routines.

Try this simple graphics program for your home or business. And once you have it in and running on your Apple, experiment with it a bit. You'll not only learn more about Basic and graphics, but also about where your dollars go. ■

Circle 405 on Reader Service card.



SOFTWARE ENHANCEMENT SYSTEM, APB-102 \$189.00
W/GPLE, APU-1, FMP, DISK, MANUAL, QUICK REFERENCE GUIDE
APU-2, UTILITY ROM #2 \$35.00
W/RENUMBER, MERGE, HOLD, ETC.
ROM DEVELOPMENT PKG. \$99.00
W/DISK, INSTRUCTIONS & EMULATION RAM

• OTHER PRODUCTS •

A/D, 12 BIT, 16 CHANNEL \$299.00
W/5 VOLTAGE RANGES, 25 μ SEC CONVERSION, COMPLETE SOFTWARE
PRO-1, XTRA-LARGE PROTOTYPE BOARD \$29.95
UP TO 52 IC's, NUMBERED & LETTERED PINS, HANDY POWER AND GROUND CONNECTIONS, NUMBERED I/O CONNECTIONS
48 LINE PARALLEL I/O BOARD, CPU-1 \$249.00
25 FILTERED & BUFFERED LINES IN, 23 BUFFERED LINES OUT, INTERRUPT, 4 TIMERS

#1 SELLER AT A.P.P.L.E.*

Powerful New Firmware Enhancement System For Apple II, //e. Triples Programming Speed!

APB-102 Ultra-Rom Board/Editor Includes:

- **Advanced G.P.L.E.* (Global Program Line Editor) in Firmware**
—With Insert, Delete, Find, Tab, Zap, Pack, Restore, End, Etc.
—Global Search & Replace - Over 60 Common Functions as 2 Stroke Macros
- **Firmware Management Program (FMP)—Finds Utilities by Name**
—New Roms Accepted Automatically—32K Virtual Memory ROM Space
- **APU-1 with over 25 Language Extensions & Ampersand Utilities**
—If/Then/Else, Print Using, Ultra Fast Search, Damaged Program Recovery
- **Always in the Machine—No Searching for a Disk**
- **Never in the way—No Program RAM used**
—Connect with 4 Keystrokes / Disconnects with 2!

"If you program & haven't used a line editor, get one right away" —MICRO MAGAZINE

"The most powerful program development tool I have" —ROBERT WILSON, PROGRAMMER

"Excellent Product, flawless" —PHILIP DALEY, PROGRAMMER

"An elegant solution... it makes editing an Applesoft® program all that it should have been in the first place, and then some." —SOFTALK REVIEW, SEPT. 1983

"The best thing for the Apple since the disk" —EDWARD DECKER, PHARMACIST/PROGRAMMER

Hollywood Hardware (213) 989-1204
6842 VALJEAN AVENUE, VAN NUYS, CA 91406

USE OUR 60 DAY UNCONDITIONAL MONEY BACK TRIAL.
IF YOU CAN PART WITH IT—WE'LL BUY IT BACK!
ASK ABOUT DEALER/USER GROUP DISCOUNTS!



*G.P.L.E. © 1983 NEIL KONZEN. SOLD UNDER LICENSE FROM SYNERGISTIC SOFTWARE / APPLE IS A REGISTERED TRADEMARK OF APPLE COMPUTER INC.
A.P.P.L.E. IS APPLE PUGTSOUND PROGRAM LIBRARY EXCHANGE, THE WORLD'S LARGEST APPLE USERS' GROUP WITH 25,000 MEMBERS.

A name to remember for memory in a hurry

flashcard^{T.M.}

disk emulator for Apple® computers.



**Buy
flashcard,
get
WordStar®
for \$100.**

If your Apple has CP/M® (or you are thinking of adding a CP/M board), here's **the** way to enjoy all the advanced features of WordStar **plus** the lightning fast processing of **flashcard**. And save lots of money in the bargain. (If you already have WordStar, we'll give you the same \$100 price on InfoStar®.) Yes, the popular **flashcard** disk emulator is now bundled with WordStar as well as packaged alone with drive diskettes for DOS 3.3, CP/M and Pascal.

Why flashcard? A solid state disk emulator gives you the speed of computer memory while maintaining the large storage capacity of a disk. With **flashcard** on your side, you can perform tasks up to ten times faster than with your floppy disk.

Simply plug **flashcard** into your Apple and experience fast, smooth, no-wait computing. No more "disk wait"

messages. No mechanical delays. No more noise as your disk chatters and clatters through a file search. And no wear and tear on your program diskettes. Instead, **flashcard** displays your data the instant you ask for it.

Your computer store should have **flashcard** in stock. If not, ask them to order one for you.

flashcard with WordStar
144k memory \$449
288k memory \$629

flashcard only, \$100 less



Synetix Inc.

10635 N.E. 38th Place
Kirkland, WA 98033
(206) 828-4884

800-426-7412

*flashcard is a registered trademark of Synetix, Inc. / **Apple is a registered trademark of Apple Computer, Inc. / ***WordStar and InfoStar are registered trademarks of MicroPro. / ****CP/M is a registered trademark of Digital Research, Inc.

Fudge It!

by Don Fudge

Getting Shapely

This month I'll be looking at the creation of basic geometrical shapes with plotting, and the act of making vector shapes travel in paths that describe these shapes.

Since you're not likely to read my column again if I teach square, triangle and rectangle drawing, I won't dwell long on these geometrical wonders. I feel that the interesting shapes are circular, elliptical and spirographical, and that the most interesting curves are sine and cosine. These are the gems we'll be learning to draw, and the paths we'll be learning to travel.

Some of the letters I get are from young people wanting a close look at graphics *without* the complexity of block shapes, fill routines, interrupts, collision counters or sprites.

Even though a larger portion of my mail is from graphics programming amateurs seeking information on shapes, sprites and animation, it doesn't hurt to cater to the seekers of the simpler side of graphics.

Getting Geometric

Let's get squares and such out of the way first. A square has four equal sides, four right (90°) angles; its area is determined by the length of a side squared. A rectangle is similar. Two sets of parallel sides are equal, but adjacent sides are unequal, and the area is base times height. A *cube* is more fun, having an area of $6S^2$ and a volume of S^3 , where S is the length of a side. A rectangular prism is kind of neat, with a width (W), height (H) and depth (D). Its area (surface) is $2HW + 2HD + 2DW$, while its volume is $D \times W \times H$.

A triangle is much sturdier, ar-

chitecturally, than a 4-or-more-sided figure, so architects often try to get triangular strength into their construction. A triangle has three angles adding up to 180° . An equilateral triangle has three equal sides and three equal angles. An isosceles triangle has two equal sides and two equal angles. If one angle is 90° , the triangle is a *right* triangle. Angles over 90° are *obtuse*; angles under 90° are *acute*. *Trigonometry* is a study of the relationships of the various sides and angles in right triangles. It's invaluable in measuring distances and in construction. A triangle's area is one half of the base times the height.

One type of triangular solid is a triangular prism, but a *cone* is more fun. It has a volume of $\pi R^2 H / 3$, where $\pi = \text{PI} = 3.1416$, R = radius and H = height.

A circle is a nice shape. Its circumference is $2\pi R$ where R = radius. The area is πR^2 . An *ellipse* is egg-shaped, and has an area of π times horizontal radius times vertical radius.

A *sphere* is one kind of three-dimensional circle. It has an area of $4\pi R^2$ and a volume of $4/3 \times \pi R^3$. A

cylinder is another kind of three-dimensional circle. Its area is $2\pi RH + 2\pi R^2$ and its volume is $\pi R^2 H$, where H = height.

Getting Curvaceous

A sine curve is a graph of the sine values of a range of numbers. A cosine curve is the same, but concerns cosine values. The *sine* of an angle is a function representing the length of the opposite side divided by the length of the hypotenuse. The *cosine* of an angle is a function representing the length of the adjacent side divided by the length of the hypotenuse. A *hypotenuse* is the side opposite the right angle. The *opposite side* is the side of the triangle opposite the angle in question. The *adjacent side* is the one that's neither the opposite side nor the hypotenuse. Sine curves and cosine curves have aesthetic shapes to them—a refreshing breeze through the arid fields of science, electronics and math.

A *spiral* is a never-ending arc that keeps getting closer and closer to a straight line; in other words, its radius keeps increasing.

In the following programs, I'll deal

```
9 H = 140:K = 95:R = 70
10 HIMEM: 36095
20 D$ = CHR$(4)
30 PRINT D$"BLOODCHAR"
35 POKE 232,0: POKE 233,141
36 PRINT "CHOOSE ANY SINGLE LETTER OR NUMBER:": INPUT "(A - Z OR 0 - 9):"
  A$
37 IF ASC(A$) > 48 AND ASC(A$) < 58 THEN A = ASC(A$) - 8: GOTO 41
38 IF ASC(A$) = 48 THEN A = 50: GOTO 41
39 IF ASC(A$) > 64 AND ASC(A$) < 91 THEN A = ASC(A$) - 64: GOTO 41
40 GOTO 36
41 HGR: POKE -16382,0: HCOLOR= 3: ROT= 64: SCALE= 1
42 FOR X = H - R TO H + R STEP 5
43 Y = K - INT ( SQR ((R * R) - (X - H) * (X - H)))
44 HCOLOR= 0: DRAW A AT 0X,0Y: HCOLOR= 3: DRAW A AT X,Y: 0X = X: 0Y = Y: NEXT
50 FOR X = H + R TO H - R STEP -5
60 Y = K + INT ( SQR ((R * R) - (X - H) * (X - H)))
70 HCOLOR= 0: DRAW A AT 0X,0Y: HCOLOR= 3: DRAW A AT X,Y: 0X = X: 0Y = Y: NEXT
```

Listing 1. Circling Letters.

Write to Don Fudge at Avant-Garde Creations,
PO Box 30160, Eugene, OR 97403.

PDQ II MAKES YOUR APPLE MICRO PERFORM LIKE A MINICOMPUTER

PRODUCTIVITY INCREASE

PDQ II will make your Apple II or IIe outperform itself. It will fly through tasks which used to take hours. It will perform multiple tasks at the same time. Most Apple software programs will exhibit a 200 to 2,000 percent increase in speed, without reprogramming.

NEXT GENERATION CAPABILITIES

That's not all—when you plug a PDQ II into your Apple, it will provide the advanced features of the 16/32 bit MC68000 microprocessor. Your Apple will be capable of utilizing sophisticated, "next generation" software products.

ONE SIMPLE SOLUTION

PDQ II eliminates the need for numerous add-ons — it includes an integrated high speed pseudo-disk, printer/communications buffer, memory extension capability and a powerful 16/32 bit processor. PDQ II consists of two system boards which simply plug inside your Apple, making your Micro think it's a Mini.

PDQ II SYSTEM SPECIFICATIONS

Standard Features

Microprocessor

- 16/32 bit MC68000
- 10 MHz

User Memory

- 256K Bytes RAM

Integrated Functionality

- Multiple printer/communications buffering
- Pseudo-disk operations
- Track buffering (p-System)

ETC Software

- ETC MC68000 Assembler
- ETC MC68000 System Monitor
- ETC p-System (version IV) to Apple DOS Interface Utility

Languages and Software Systems Supported

- Applesoft BASIC Compatibility & Speed up
- Apple DOS 3.3
- UCSD p-System (version IV) Interpreter—executes
- UCSD Pascal, FORTRAN-77 and BASIC P-Code
- UCSD Pascal. **Now Included!**

INSURANCE FOR THE FUTURE

PDQ II provides a powerful p-System run time environment, making it possible for your Apple to take advantage of many of the hundreds of high-quality p-System applications...the same applications available for Digital, IBM, HP, and other computers.

PDQ II technology makes your current investment in software and training more productive, while providing an almost unlimited growth path.

Now wouldn't you like to have the PDQ II performing for you?

PDQ II comes with a full one year warranty and will be available through your local Apple dealer. If you simply cannot wait, send your check or M.O. for \$1495 (postage included) to: Enhancement Technology Corporation, P.O. Box 1267, Pittsfield, MA 01202. Mass residents must include 5% sales tax. **413-445-4219**.

We'll send you the PDQ II. P.D.Q.!

Now available for \$995 without UCSD p-System and UCSD Pascal.

PDQ II
The Ultimate Peripheral



Optional Features

Hardware

- 1 Megabyte RAM (Fall 1983)

Software

- UCSD p-System Development System
- FORTRAN
- BASIC
- Unix-like Operating System
- Artificial Intelligence Laboratory incorporating a Deductive Reasoning System (Spring 1984)

Apple II and Apple IIe are registered trademarks of Apple Computer, Inc. UCSD p-System is a registered trademark of the Regents of the University of California. Digital is a registered trademark of Digital Equipment Corporation. IBM is a registered trademark of International Business Machines Corporation. Osborne is a registered trademark of Osborne Computer Corporation.

ETC ENHANCEMENT
TECHNOLOGY
CORPORATION

with many of the shapes above, especially ellipses, circles, sine curves, cosine curves, spirals and spirographical shapes.

Loco Listings

Listing 1 is Circling Letters. To vary the circle's size, vary R in line 9. To vary the center, vary H and K, the horizontal and vertical center coordinates.

Listing 2 is Circle or Ellipse Drawing. You'll notice that as the circles' points are plotted, they become sketchy and infrequent in some places. I solved this problem by plotting half-circles from four different formulae (that's why there are four FOR-NEXT loops).

"Sine and cosine curves manage to create some great figures."

Ellipsing Letters is Listing 3. It allows letters to move in an elliptical orbit. To vary the radii of the ellipse, change A or B in line 19. Don't make radii so big that you get "illegal quantity" errors.

Spiralling Dot is Listing 4. As you can see in 40, 90, 140 and 190, the radius keeps on increasing as the circle formula does its stuff. A quicker, looser spiral would require $R = R + 2$ or more, while $R = R + .5$ would give a tighter one.

Spirographing Formulae is Listing 5. If you've never played with a *spirograph*, I suggest you get one and experiment with it—they're a trip. In Listing 5, Polar Coordinates, functions defined by the DEF and FN instructions, and sine and cosine curves manage to create some great figures. You can input step and scale values, and can have an axis if you wish.

Listing 6 is Spirographing Letters. In this little gem, letters (vector shapes) are made to describe a spiro-

```

1  PRINT "TO DO A CIRCLE, SIMPLY MAKE YOUR      HORIZONTAL & VERTICAL RA
   DII EQUAL.": PRINT
2  INPUT "CENTER,X COORD.:";J
3  INPUT "CENTER,Y COORD.:";K
4  INPUT "HORIZONTAL RADIUS:";A
5  INPUT "VERTICAL RADIUS:";B
6  PRINT "ONCE FIGURE IS DRAWN, HIT ANY KEY TO  CONTINUE---": FOR OH = 1
   TO 3500: NEXT : IF FL = 1 THEN POKE - 16304,0: POKE - 16297,0: GOTO
   20
7  HGR : POKE - 16302,0: HCOLOR= 3
8  FOR Y = K - B TO K + B
9  X = J + INT ( SQRT ((A * A) * (1 - (((Y - K) * (Y - K)) / (B * B))))))
10 HPLLOT X,Y: NEXT
11 FOR X = J - A TO J + A
12 Y = K - INT ( SQRT ((B * B) * (1 - (((X - J) * (X - J)) / (A * A))))))
13 HPLLOT X,Y: NEXT
14 FOR X = J - A TO J + A
15 Y = K + INT ( SQRT ((B * B) * (1 - (((X - J) * (X - J)) / (A * A))))))
16 HPLLOT X,Y: NEXT
17 FOR Y = K - B TO K + B
18 X = J - INT ( SQRT ((A * A) * (1 - (((Y - K) * (Y - K)) / (B * B))))))
19 HPLLOT X,Y: NEXT
20 PP = PEEK (- 16384): IF PP > 127 THEN POKE - 16368,0: GOTO 110
21 GOTO 100
22 POKE - 16303,0: POKE - 16298,0: INPUT "DO YOU WANT TO DO ANOTHER?(Y
   /N):";RR$: IF RR$ = "Y" THEN 120
23 END
24 PRINT : INPUT "DO YOU WANT TO PUT IT ON TOP OF THE LAST ONE OR HAVE SC
   REEN CLEARED?(T FOR ON TOP & C FOR CLEAR):";AN$:
25 IF AN$ = "T" THEN FL = 1
26 GOTO 2

```

Listing 2. Circle or Ellipse Drawing.

```

10 HIMEM: 36005
11 J = 140:K = 95:A = 100:B = 50
12 D$ = CHR$(4)
13 PRINT D$"BLOADCHAR"
14 POKE 232,0: POKE 233,141
15 PRINT "CHOOSE ANY SINGLE LETTER OR NUMBER:": INPUT "(A - Z OR 0 - 9):"
   ;A$
16 IF ASC (A$) > 48 AND ASC (A$) < 58 THEN A = ASC (A$) - 8: GOTO 41
17 IF ASC (A$) > 48 THEN A = 50: GOTO 41
18 IF ASC (A$) > 64 AND ASC (A$) < 91 THEN A = ASC (A$) - 64: GOTO 41
19 GOTO 36
20 HGR : POKE - 16302,0: HCOLOR= 3: ROT= 64: SCALE= 1
21 FOR X = J - A TO J + A STEP 5
22 Y = K - INT ( SQRT ((B * B) * (1 - (((X - J) * (X - J)) / (A * A))))))
23 HCOLOR= 0: DRAW A AT 0X,0Y: HCOLOR= 3: DRAW A AT X,Y:0X = X:0Y = Y: NEXT
24
25 FOR X = J + A TO J - A STEP - 5
26 Y = K + INT ( SQRT ((B * B) * (1 - (((X - J) * (X - J)) / (A * A))))))
27 HCOLOR= 0: DRAW A AT 0X,0Y: HCOLOR= 3: DRAW A AT X,Y:0X = X:0Y = Y: NEXT

```

Listing 3. Ellipsing Letters.

Listing 4. Spiralling Dot.

```

1  ONERR GOTO 63995
2  H = 140:K = 95:R = 5
3  D$ = CHR$(4)
4  PRINT D$"BLOADDOT"
5  POKE 232,80: POKE 233,20
6  HGR : POKE - 16302,0: HCOLOR= 3
7  ROT= 64: SCALE= 1
8  FOR Y = K - R / 1.5 TO K + R / 1.5 STEP 10
9  X = H + INT ( SQRT ((R * R) - (Y - K) * (Y - K)))
10 XDRAW 1 AT 0X,0Y
11 0X = X:0Y = Y
12 R = R + 1
13 NEXT
14 FOR X = H + R / 1.5 TO H - R / 1.5 STEP - 10
15 Y = K + INT ( SQRT ((R * R) - (X - H) * (X - H)))
16 XDRAW 1 AT 0X,0Y
17 0X = X:0Y = Y
18 R = R + 1
19 NEXT

```

Listing continued.

When you're ready to add disk drives to your system, pick them carefully. Get all the options you need, but don't pay for features you'll never use.

You get that flexibility in Micro-Sci 5 1/4" floppy disk drives. Choose from a selection that includes everything from a beginner's first add-on to large capacity, high-speed subsystems right for the busiest office environment.

Micro-Sci's Model A2 is a superbly crafted, 35-track drive which is completely compatible with all Apple II® and Apple IIe® hardware and software. It features a jumper-selectable boot PROM and a price tag its competitors envy. Just right for the budget-conscious consumer!

Programmers and word processors rejoice! You need no longer sacrifice pre-packaged software compatibility in favor of large storage when you buy a disk drive for your Apple II or IIe. The new Model A82 from Micro-Sci combines a full 328K capacity—more than twice the space of a Disk II®—

with the ability to read standard 35-track software.

Apple III® owners will crave the Model A3. It offers all the features and capabilities of the Disk III® at a fraction of the price. Ideal as a second drive!

At 286K, Micro-Sci's Model A73 provides Apple III users with twice the capacity of the Disk III, and it plugs right in to the built-in controller—no extra board or power cord!

The king of all Apple compatible drives is the Micro-Sci Model A143, the largest 5 1/4" floppy disk storage system available for the Apple III. 572K storage capacity and the 5msec access time make the A143 a powerful back-up device for hard disk systems.

One option you'll never see on a Micro-Sci drive is a princely price tag—we control your costs as carefully as we control our quality. So drive carefully to your nearest computer center for a demonstration of Micro-Sci craftsmanship and quality. Do it today!



DRIVE CAREFULLY.

μ-SCI

MICRO-SCI

Circle 371 on Reader Service card.

*Apple II, Apple IIe, Apple III, Disk II and Disk III are registered trademarks of Apple Computer Inc.

MICRO-SCI IS A DIVISION OF STANDUN CONTROLS INC.

2158 SOUTH HATHAWAY STREET • SANTA ANA, CALIFORNIA 92705 • (714) 662-2801 • TELEX: 910-346-6739

SIXTH FINGER™

The automatic repeat key for your Apple II*

\$9.95

Also introducing our new adjustable unit with on/off feature

\$12.95

»Adapts your Apple; all keys held down will repeat after the perfect delay.

»Great for program editing, word processing & VisiCalc*.

»Easy for anyone to install. Plugs onto the Apple's encoder board (all rev. 7 or later and late rev. 6 with encoder board). (30 day trial)

Regular unit **\$9.95**

Adjustable unit **12.95**

Add shipping **1.00**

Overseas shipping **3.00**

Cal. res. add 6% tax

To order or request free instruction sheet use order form or call (213) 675-4706

☐ Visa ☐ Check or money order enclosed
☐ MasterCard ☐ Free instruction sheet
 Card # _____ Exp. _____
 Sign. _____
 Name _____
 Address _____
 City _____ St. _____ Zip _____
 Amount enclosed \$ _____ For _____

Ivers Specialties

Dept. IC-1
12841 Hawthorne Blvd.
Box 524
Hawthorne, Ca. 90250



Dealer Inquiries Invited

*Apple is a registered trademark of Apple Computer Co.

*VisiCalc is a registered trademark of VisiCorp.

Fudge It!

Listing continued.

```

120 FOR Y = K + R / 1.5 TO K - R / 1.5 STEP - 10
130 X = H - INT ( SQR ((R * R) - (Y - K) * (Y - K)))
131 XDRAW 1 AT 0X,0Y
134 0X = X:0Y = Y
140 R = R + 1
150 NEXT
170 FOR X = H - R / 1.5 TO H + R / 1.5 STEP 10
180 Y = K - INT ( SQR ((R * R) - (X - H) * (X - H)))
181 XDRAW 1 AT 0X,0Y
184 0X = X:0Y = Y
190 R = R + 1
200 NEXT
300 GOTO 20
63995 PP = PEEK (222): POKE 216,0: END
  
```

```

3 INPUT "CHOOSE TYPE 1-10: "; TT
4 ON TT GOTO 10,11,12,13,14,15,16,17,18,19
10 DEF FN NUC(NB) = COS (4 * NB): GOTO 20
11 DEF FN NUC(NB) = SIN (4 * NB): GOTO 20
12 DEF FN NUC(NB) = COS (2 * SIN (NB)): GOTO 20
13 DEF FN NUC(NB) = COS (2 * SIN (2 * NB)): GOTO 20
14 DEF FN NUC(NB) = COS ( SIN (100 * NB)): GOTO 20
15 DEF FN NUC(NB) = COS ( SIN (8 * NB)): GOTO 20
16 DEF FN NUC(NB) = COS (4 * SIN (2 * NB)): GOTO 20
17 DEF FN NUC(NB) = SIN (6 * COS (4 * NB)): GOTO 20
18 DEF FN NUC(NB) = SIN (8 * SIN (4 * NB)): GOTO 20
19 DEF FN NUC(NB) = COS (8 * SIN (16 * NB)): GOTO 20
20 HOME : VTAB 1
30 INPUT "STEP?(.1 TO 3,USUALLY): "; ST
35 INPUT "SCALE?(20-80,USUALLY): "; SC
50 HOME
60 INPUT "AXIS?(Y/N): "; RR$
70 IF RR$ = "Y" THEN FLAG = 1
80 HGR : POKE - 16302,0
90 IF FLAG = 0 THEN 130
95 HCOLOR= 1
105 HPLLOT 0,95 TO 279,95
125 HPLLOT 141,0 TO 141,191
130 HCOLOR= 3
135 FOR NN = 0 TO 360 STEP ST
145 CN = NN / 57.3
155 Y = FN NUC(CN) * SIN (CN)
170 X = FN NUC(CN) * COS (CN)
175 Y = INT (Y * SC): X = INT (X * SC)
185 IF NN = 0 THEN HPLLOT 140 + X,95 - Y
195 HPLLOT TO 140 + X,96 - Y
300 NEXT
  
```

Listing 5. Spirographing Formulae.

graphical path. To change the path, vary the formula in line 45.

Sine Color is a sine graph with a lot of color. Vary colors in lines 3, 41, 43 and 46. Or, change the depth of the curves by varying the five in lines 20 and 34. That's Listing 7.

Boomerang.functions is an experimental program I wrote to test various sine and cosine curves for my "Boomerang!" game in my StarSprite II sprite graphics system. Here it is in all its splendor (Listing 8). One can make aesthetic curves with this algo-

rithm. To get a list of your sine and cosine values, dump lines 10 and 60 and insert lines 35 and 93 that PRINT N, X, Y.

Incidentally, you must use POKE 104,64 and POKE 16384,0 in your Hello program that boots before you run any of these programs. You'll also have to keep doing CATALOG to see what to RUN next. You cannot run DT or CHAR. DT is simply a vector shape dot, a table seven bytes long. Do CALL - 151 before entering it:

\$1450:01 00 04 00 07 00 00

*REDUCES DISKETTE COST 50%! DOUBLES DISKETTE STORAGE SPACE



Owners of 5 1/4" single "read/write" head disk drives can immediately double diskette storage space by using **NIBBLE NOTCH I** or **II**. The back of single sided diskettes are burnished. To use it you need a "write enable notch," and some also need in addition, an "index hole." **NIBBLE NOTCH I** and **II** are precision engineered tools designed exclusively for this purpose.

NIBBLE NOTCH I

(Cuts square Write Enable Notch) For users of Apple, Franklin, Kaypro, Atari, Commodore and most other soft sectored systems.

only **\$14.95** each

add \$1.50 each P&H / (\$4.50 foreign P&H)

NIBBLE NOTCH II

(Cuts square Write Enable Notch and 1/4 inch round "index hole") for owners of IBM, TRS 80 I & III, Osborne and others needing "index hole", and all other "hard sectored" systems.

only **\$21.90** each

add \$2.50 each P&H / (\$6.50 each foreign P&H)

Florida Residents Add 5% Sales Tax

• IT'S A MONEY SAVER! •

Sold at leading computer and office supply stores in your area.

Dealer inquiries are invited.

ORDER TODAY!

SEND CHECK OR MONEY ORDER TO:

NIBBLE NOTCH™

DIVISION OF CORTAN INTERNATIONAL

4211 N.W. 75 TERRACE • DEPT. 21 • LAUDERHILL, FL 33319

PAT. PEND.

ALL TRADEMARKS ARE ACKNOWLEDGED

Circle 306 on Reader Service card.

MICROTUTOR™

AN EDUCATIONAL EXPERIENCE

- ☐ Teach or quiz students, children, employees or yourself on subjects of your own choosing.
- ☐ Print tests or test masters with random questions.
- ☐ Order yours today for only \$99.95

ARITHMETIC™

A LOT OF DRILL FOR THE DOLLAR

- ☐ Create your own addition, subtraction, multiplication and division problem ranges.
- ☐ Get a better understanding of decimals and signed numbers.
- ☐ Order this impressive program now for only \$29.95



LOCUS
SYSTEMS

P. O. BOX 248
N. WILKESBORO, NC 28659
(919) 838-4166

DEALER INQUIRIES WELCOME

*APPLE II DOS 3.3
48K Memory
1 or 2 Disk Drives

INCLUDE \$2.00 FOR SHIPPING
(NC RESIDENTS ADD 4% SALES TAX)

*APPLE is a Registered Trademark of APPLE COMPUTER, INC.

Circle 118 on Reader Service card.



Hats off to a machine language teaching system that works.

Machine language programming isn't easy, but you don't have to be a genius to learn it. Despite what you may think after getting lost in umpteen "How to program the 6502" books. Let The Visible Computer: 6502 and your Apple teach it to you.

The Visible Computer: 6502 is a unique blend of text and software for mastering the elusive skills of machine language.

It's an animated simulation of the 6502 micro-processor that lets you see with your own eyes how the 6502 executes programs. You'll be using it as a debugging tool for years to come.

It's a tutorial. The 150 page manual is more than just instructions on running the simulator — it may just be the best book on machine language ever written.

It's 30 demonstration programs you'll work through with the 6502 simulator, from simple register loads to advanced programs that do high resolution graphics and tone generation.

For Apple II Plus and IIe computers. \$49.95 at better software dealers, or direct from Software Masters, 3330 Hillcroft Suite BB, Houston, Texas 77057. (713) 266-5771. Bank cards accepted. Please include \$3.00 shipping.



The Visible Computer: 6502.

```

10 HIMEM: 36095
19 S = 50
20 D$ = CHR$(4)
30 PRINT D$"BLOADCHAR"
35 POKE 232,0: POKE 233,141
36 PRINT "CHOOSE ANY SINGLE LETTER OR NUMBER:": INPUT "(A - Z OR 0 - 9):"
  A$
37 IF ASC (A$) > 48 AND ASC (A$) < 58 THEN A = ASC (A$) - 8: GOTO 41
38 IF ASC (A$) = 48 THEN A = 50: GOTO 41
39 IF ASC (A$) > 64 AND ASC (A$) < 91 THEN A = ASC (A$) - 64: GOTO 41
40 GOTO 36
41 HGR : POKE - 16302,0: HCOLOR= 3: ROT= 64: SCALE= 1
45 DEF FN NK(U) = COS (4 * SIN (2 * U))
140 FOR O = 0 TO 360 STEP 5
150 U = O / 57.3
160 Y = FN NK(U) * SIN (U)
170 X = FN NK(U) * COS (U)
180 Y = INT (Y * S):X = INT (X * S)
190 SCALE= 1: ROT= 64: HCOLOR= 0: DRAW A AT 140 + OX,95 - OY: HCOLOR= 3: DRAW
  A AT 140 + X,95 - Y:OX = X:OY = Y: NEXT

```

Listing 6. Spirographing Letters.

```

2 HGR : POKE - 16302,0
3 HCOLOR= 5
10 A = 1
20 Y = INT (5 * COS (A)) + INT (5 * SIN (A))
33 HPLLOT 10 * A,10 * Y + 100
34 Y = INT (5 * COS (A)) + INT (5 * SIN (A))
35 A = A + .133
37 IF 10 * A > = 278 THEN GOTO 70
38 HPLLOT TO 10 * A,10 * Y + 100
41 HCOLOR= 6
42 HPLLOT 10 * A,10 * Y + 100 TO 10 * A,0
43 HCOLOR= 2
44 HPLLOT 10 * A,10 * Y + 100 TO 10 * A,185
46 HCOLOR= 5
60 GOTO 20
70 END

```

Listing 7. Sine Color.

```

10 HGR : HCOLOR= 3: POKE - 16302,0
15 Y = 0
20 FOR A = 1.5 TO 5 STEP .05
25 N = COS (A)
28 X = (208 - 5) * N + 208
30 Y = Y + 1.5
40 HPLLOT X,Y: NEXT
50 GET A$
60 HGR : HCOLOR= 3: POKE - 16302,0
65 Y = 0
70 FOR A = 0 TO 3.3 STEP .05
80 N = SIN (A)
90 X = 145 * N + 96
92 Y = Y + 1.5
95 HPLLOT X,Y: NEXT

```

Listing 8. Boomerang functions.

then hit Return and BSAVE DT, A5200, L7.

The long listing, Char, is Listing 9. It's a complete set of vector shape numbers and letters (and some symbols) that is scalable and rotatable. It takes a while to enter, but it's worth it. (You also could modify the preceding programs and use your own vec-

tor shapes.) In case it looks familiar, yes—I have used it before in this column. I find it the handiest vector shape table I've ever had. Perhaps you will too. You may DRAW, XDRAW, SCALE and ROTate with it.

If you use your own shape tables, you must change the enclosed program listings so that they BLOAD your file name, rather than BLOAD CHAR and DT.

By the way, the starting address of DT is \$1450 and the length is seven. The starting address of Char is \$8D00 and the length is \$8D0. Char requires a HIMEM of 36096 to work correctly. The reason: strings will store over the shape table if you don't specify this HIMEM (36096=\$8D00). The strings in a program will always store downwards from HIMEM, and default HIMEM is 38400, which is only a few bytes beyond the end of the Char file's RAM address after it's

BLOADED.

POKE 104,64 and POKE 16384,0 in your Hello program insure that all programs will LOAD at \$4000, out of the way of hi-res page 1, which is where the graphics in these programs will be performed. If we wanted to use HGR2 instead of HGR in the programs—which would mean we'd be using hi-res page 2—we'd need POKE 104,96 and POKE 24576,0 in Hello.

See you next time! ■

Listing 9. Char.

```

*8000.95D7
8000- 34 00 6E 00 A5 00 E5 00
8008- 13 01 46 01 77 01 9C 01
8010- CF 01 F8 01 21 02 43 02
8018- 74 02 91 02 C1 02 F2 02
8020- 25 03 55 03 80 03 C6 03
8028- 00 04 1F 04 49 04 71 04
8030- A1 04 D2 04 F5 04 26 05
8038- 2D 05 35 05 48 05 76 05
8040- 87 05 A5 05 C4 05 E1 05
8048- F7 05 06 06 14 06 5D 06
8050- 79 06 94 06 BB 06 F2 06
8058- 2B 07 50 07 68 07 C4 07
8060- E8 07 2B 08 6A 08 B6 08
8068- 88 08 FF FF FF FF 24 24
8070- 24 24 24 24 25 25 2D 2D
8078- 2D 2D 2D 2E 2E 36 36 3F
8080- 36 36 36 3F 24 24 3F 3F
8088- 3F 3F 3F 3F 36 36 3F 3F
8090- 08 40 41 C0 18 20 24 25
8098- 2D 2D 2D 2D 2E 36 3E 3F
80A0- 3F 3F 3F 07 00 24 24 24
80A8- 24 24 24 24 2D 2D 2D 2D
80B0- 2D 2D 2E 2E 36 3E 3E 36
80B8- 35 35 36 37 37 3F 3F 3F
80C0- 3F 3F 3F 41 28 2D 2D 2D
80C8- 2D 2C 3C 3C 3C 3F 3F 3F
80D0- 37 36 46 40 C0 28 2D 2D
80D8- 2D 2C 2C 3C 3C 3F 3F 3F
80E0- 3F 36 36 05 00 09 2D 2D
80E8- 2D 2D 2D 2C 2C 24 3F 3E
80F0- 3E 3F 3F 3F 27 27 24 24
80F8- 24 2C 2C 2D 2D 2D 35 35
8E00- 2D 24 27 27 3F 3F 3F 3F
8E08- 3F 3E 3E 36 36 36 36 36
8E10- 35 35 00 2D 2D 2D 2D 2D
8E18- 2D 2C 2C 24 24 24 24 24
8E20- 27 27 3F 3F 3F 3F 3F 3F
8E28- 36 36 36 36 36 36 36 40
8E30- 01 2D 2D 2D 2D 25 25 24
8E38- 24 24 3C 3C 3F 3F 3F 3F
8E40- 36 36 36 36 36 00 2D 2D
8E48- 2D 2D 2D 2D 2D 24 3F 3F
8E50- 3F 3F 3F 3F 24 24 2D 2D
8E58- 2D 2D 24 3F 3F 3F 3F 24
8E60- 24 2D 2D 2D 2D 2D 2D 24
8E68- 3F 3F 3F 3F 3F 3F 3F 36
8E70- 36 36 36 36 36 00 2D 2D
8E78- 24 24 24 2D 2D 2D 2D 24
8E80- 3F 3F 3F 3F 24 24 2D 2D

```

Listing continued.

Circle 246 on Reader Service card.

APPLE TEES!



Style A:
'My Apple
Is Programmed To Byte!'

Also available:
Style B
'My Apple Has Juice!'

Stand up and be counted with these great 50% cotton — 50% polyester T-shirts, light blue with red lettering. Adult & child sizes. A great gift for that Apple-lover in your life!

Apple is a registered trademark of Apple Computers, Inc.

Make check payable to:
SINEQUANON
P.O. Box 235
Cedarhurst, N.Y. 11516

Please rush me _____ shirt(s) at \$8.50 each (shipping included). Circle style and size below:

Style: A or B
Adult: S M L XL
Child: S M L

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
(Allow 4 to 6 weeks delivery)

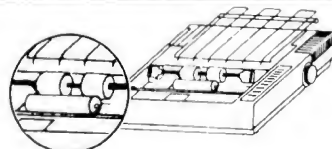
Circle 344 on Reader Service card.

GOOD NEWS FOR EPSON MX-80 and RX-80 OWNERS

MICRO-GRIP FRICTION FEED

Add inexpensive friction feed to your MX-80 or RX-80. Easily installed with screwdriver, no soldering. Does not disturb tractor feed. Also fits printers based on Epson design such as IBM PC, Commodore and H-P Dot Matrix printers.

Wt. 1 lb. ONLY \$39.95/ea.



CARTRIDGE RIBBONS FOR...

EPSON MX 70/80 \$5.00/ea.
EPSON MX 100 9.75/ea.
RS Daisy Wheel II M/S 5.75/ea.
RS LP I, IV (Zip Pack) 2.75/ea.
RS LP I, II, IV (Cart.) 5.85/ea.



RS LP III, V \$5.85/ea.
RS LP VI, VIII 7.00/ea.
RS DMP 400 5.50/ea.
DIABLO Hytype II M/S 4.50/ea.
OKIDATA 84 5.00/ea.

PRESSURE SENSITIVE LABELS

ONE ACROSS 3-1/2" x 15/16"
ONLY \$2.70/M
Order in increments of 5,000

COMPUTER PAPER MINI PACKS

9-1/2" x 11" Blank, 20 lb. 1 pt., 1000/ctn.
(Extra fine perforations r. & l.) ONLY \$16.25/ctn.
14-7/8" x 11" 1/2" Green Bar, 15 lb. 1 pt., 1500/ctn.
ONLY \$25.00/ctn.

STANDARD PACKAGING

9-1/2" x 11" Blank, 15 lb. 1 pt. 3300/ctn. ONLY \$26.00/ctn.
14-7/8" x 11" 1/2" Green Bar, 15 lb. 1 pt., 3500/ctn.
ONLY \$40.00/ctn.

ALL COMPUTER SUPPLIES AT DISCOUNT PRICES TERMS AND CONDITIONS

We require a minimum order of \$10.00, not including shipping charges. Prices effective 7/1/83 and subject to change without notice. To keep prices competitive we operate on cash basis. Credit extended to Federal agencies, but all other institutions and individuals send payment with order, our prices DO NOT include shipping. No C.O.D. orders accepted. We ship via UPS or motor freight. Include street address, we don't ship to P.O. boxes. Freight charges added to credit card purchases. No merchandise returned without prior written authorization from us. Merchandise ordered in error or not wanted is subject to 25% restocking charge and limited to merchandise credit only.



Send for our Free Brochure of Computer Supplies. Ask for Catalog No. DP-50.



BILL COLE ENTERPRISES, INC.

P.O. BOX 60 • DEPT. IC WOLLASTON, MA 02170-0060 617-963-5510
For Credit Card Orders ONLY! Call Toll Free 1-800-225-8249

Circle 400 on Reader Service card.

TALK IS CHEAP

In fact, thanks to Classical Computing and **Speak Up!**™, it now costs only \$39.95 to turn your Apple II+® into the most talkative micro on the block.

Speak Up! is a machine language, voice synthesis program for your Apple II+ computer. It's 100% software and requires no hardware, and doesn't fill up an expansion slot. You don't need a B.S. in electrical engineering to use it, and making back-up copies is simple. There's *nothing* else to buy. And, best of all, text-to-speech conversion makes it simple to make your BASIC programs talk!

Easy to use, **Speak Up!** will make your computer a real chatterbox — without sending you to the poorhouse.

Checks are accepted without delay — and **WE** pay postage!



Call toll-free, 24 hours: 1-800-334-0854, ext 890 (except from North Carolina)

**At \$39.95,
talk really is cheap!**

(Apple II+ is a registered trademark of Apple Computer, Inc.)



Classical Computing, Inc.

PO Box 3318
Chapel Hill, NC 27515

Fudge It!

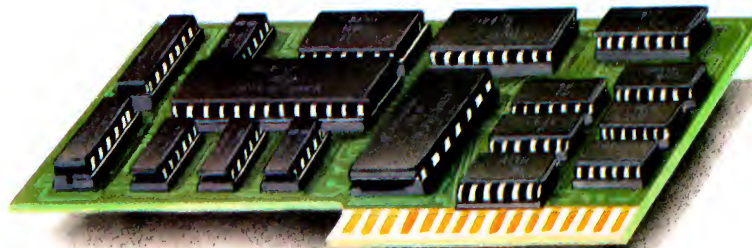
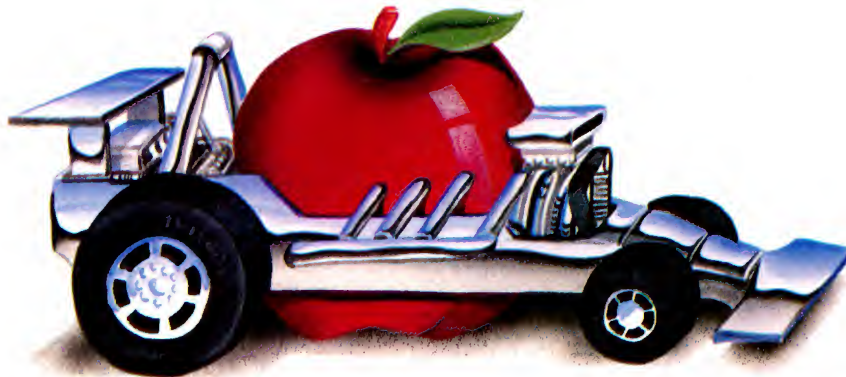
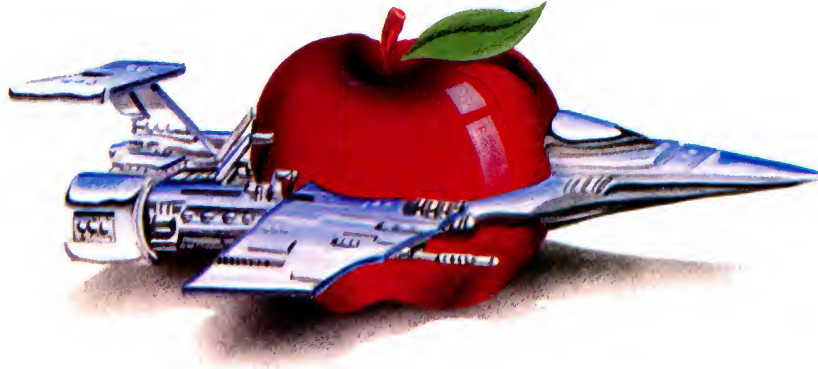
Listing continued.

8E88- 2D 2D 2D 2D 24 3F 3F 3F
8E90- 3F 3F 3F 3F 36 36 36 36
8E98- 36 36 36 00 09 2D 2D 2D
8EA0- 2D 2D 2C 2C 24 24 3F 3F
8EA8- 37 2E 2D 3E 3E 3F 3F 3F
8EB0- 27 27 24 24 24 2C 2C 2D
8EB8- 2D 2D 35 35 2D 2E 27 27
8EC0- 3F 3F 3F 3F 3F 3E 3E 36
8EC8- 36 36 36 36 35 35 00 2D
8ED0- 24 24 24 2D 2D 2D 2D 2D
8ED8- 36 36 36 2D 24 24 24 24
8EE0- 24 24 24 3F 36 36 36 3F
8EE8- 3F 3F 3F 3F 24 24 24 3F
8EF0- 36 36 36 36 36 36 36 00
8EF8- 2D 2D 2D 2D 2D 2D 2D 24
8F00- 3F 3F 3F 24 24 24 24 24
8F08- 2D 2D 2D 24 3F 3F 3F 3F
8F10- 3F 3F 3F 36 2D 2D 2D 36
8F18- 36 36 36 36 3F 3F 3F 36
8F20- 00 09 2D 2D 2D 2D 2D 2C
8F28- 2C 24 24 24 24 24 24 3F
8F30- 36 36 36 36 36 3E 3E 3F
8F38- 3F 3F 27 27 24 3F 36 36
8F40- 35 35 00 2D 24 24 2C 2E
8F48- 35 2D 2E 35 2D 2E 2D 24
8F50- 3F 3C 27 3F 3C 27 3F 24
8F58- 2D 2C 25 2D 2C 25 2D 24
8F60- 3F 37 3F 3E 37 3F 3E 37
8F68- 27 24 24 3F 36 36 36 36
8F70- 36 36 36 00 2D 2D 2D 2D
8F78- 2D 2D 2D 24 3F 3F 3F 3F
8F80- 3F 3F 24 24 24 24 24 24
8F88- 3F 36 36 36 36 36 36 36
8F90- 00 2D 24 24 24 24 24 35
8F98- 35 35 35 2D 2C 2C 2C 2C
8FA0- 36 36 36 36 36 2D 24 24
8FA8- 24 24 24 24 24 3F 3E 3E
8FB0- 3E 3E 3E 27 27 27 27 27
8FB8- 3F 36 36 36 36 36 36 36
8FC0- 00 2D 24 24 24 24 24 35
8FC8- 35 35 35 35 35 35 35 35
8FD0- 35 2D 24 24 24 24 24 24
8FD8- 24 3F 36 36 36 36 36 27
8FE0- 27 27 27 27 27 27 27 27
8FE8- 27 3F 36 36 36 36 36 36
8FF0- 36 00 09 2D 2D 2D 2D 2D
8FF8- 2C 2C 24 24 24 24 24 27
9000- 27 3F 3F 3F 3F 3F 3E 3E
9008- 36 36 36 36 36 35 35 40
9010- 2D 2D 2D 2D 2C 24 24 24
9018- 24 27 3F 3F 3F 3F 3E 36
9020- 36 36 36 35 00 2D 24 24
9028- 24 2C 2D 2D 2D 2D 25 25
9030- 25 24 27 27 3F 3F 3F 3F
9038- 3F 3F 36 36 36 36 36 36
9040- 36 08 48 48 00 00 28 2D
9048- 2D 2D 2D 2C 3C 3F 3F
9050- 3F 3F 36 06 00 09 2D 2D
9058- 2D 2D 2C 2E 2D 3C 2C 24
9060- 24 24 24 24 27 27 3F 3F
9068- 3F 3F 3F 3E 3E 36 36 36
9070- 36 36 35 35 40 2D 2D 2D
9078- 3C 24 2D 2E 2E 24 24 24
9080- 24 27 3F 3F 3F 3F 3E 36
9088- 36 36 36 35 00 2D 24 24
9090- 24 2C 2D 2D 2D 35 36 36
9098- 36 2D 24 24 24 24 25 25
90A0- 24 07 3C 3C 3F 3F 3F 3F
90A8- 3F 37 36 36 36 36 36 36
90B0- 0E 40 41 00 00 18 08 2D
90B8- 2D 2D 2D 05 2C 3C 3C 3F
90C0- 3F 3F 3F 36 06 00 09 2D
90C8- 2D 2D 2D 2D 2C 2C 24 24
90D0- 27 27 3F 3F 3F 3F 27 27
90D8- 2C 2C 2D 2D 2D 35 35 2D
90E0- 24 27 27 3F 3F 3F 3F
90E8- 3E 3E 36 36 35 35 2D 2D
90F0- 2D 2D 35 35 3E 3E 3F 3F

90F8- 3F 27 27 3F 36 35 35 00
9100- 49 49 2D 24 24 24 24 24
9108- 24 2D 2D 2D 24 3F 3F 3F
9110- 3F 3F 3F 3F 36 2D 2D 2D
9118- 36 36 36 36 36 00 09 09
9120- 2D 2D 2D 2D 2D 2C 2C 24
9128- 24 24 24 24 24 3F 36 36
9130- 36 36 36 3E 3E 3F 3F 3F
9138- 27 27 24 24 24 24 24 3F
9140- 36 36 36 36 36 35 35 35
9148- 00 49 49 2D 24 25 2C 24
9150- 25 2C 24 25 2C 24 3F 3E
9158- 36 37 3E 36 37 3E 27 3C
9160- 24 27 3C 24 27 3F 36 35
9168- 2E 36 35 2E 36 35 2E 36
9170- 00 2D 2C 2C 2C 2C 2C 35
9178- 35 35 35 35 2D 24 24 24
9180- 24 24 24 24 3F 36 36 36
9188- 36 36 27 27 27 3F 3E 3E
9190- 3E 3E 3E 24 24 24 24 24
9198- 3F 36 36 36 36 36 36 36
91A0- 00 2D 2C 2C 2C 2C 2C 35
91A8- 35 35 35 35 2D 24 27 27
91B0- 27 27 27 2C 2C 2C 2C 2C
91B8- 24 3F 3E 3E 3E 3E 27 27
91C0- 27 27 27 27 3F 36 35 35
91C8- 35 35 35 3E 3E 3E 3E 3E
91D0- 36 00 49 49 2D 24 24 24
91D8- 24 25 25 25 25 25 3F 3F
91E0- 37 37 37 37 3F 3C 3C 3C
91E8- 3C 3F 2E 2E 2E 2E 2E 2E
91F0- 36 36 36 36 00 24 25 25
91F8- 25 25 25 25 25 25 25 25
9200- 3F 3F 3F 3F 3F 24 2D 2D
9208- 2D 2D 2D 2D 2D 36 37 37
9210- 37 37 37 37 37 37 37 37
9218- 2D 2D 2D 2D 2D 36 3F 3F
9220- 3F 3F 3F 3F 3F 00 49 49
9228- 2D 24 3F 36 00 49 49 2E
9230- 2C 24 3F 36 00 49 49 2D
9238- 24 3F F6 40 18 08 2D 24
9240- 24 24 24 24 3F 36 36 36
9248- 36 36 00 49 49 2D 24 3F
9250- F6 40 18 08 2D 24 2C 2D
9258- 25 25 25 24 3C 3C 3F 3F
9260- 3F 3F 3F 3E 3E 3E 2E 25
9268- 2C 2C 2D 2D 2D 35 35 37
9270- 3F 3F 37 36 36 00 40 00
9278- 40 01 2D 2D 2D 2D 2D 24
9280- 3F 3F 3F 3F 3F 36 00 40
9288- 40 2D 2D 2D 2D 2D 24 3F
9290- 3F 3F 3F 3F F6 40 18 08
9298- 2D 2D 2D 2D 2D 24 3F 3F
92A0- 3F 3F 3F 36 00 49 49 2D
92A8- 24 24 24 2D 2D 2D 24 3F
92B0- 3F 3F 24 24 24 3F 36 36
92B8- 36 3F 3F 3F 36 2D 2D 2D
92C0- 36 36 36 00 2D 2C 2C 2C
92C8- 2C 2C 2C 2C 2C 2C 2C 2C
92D0- 2C 24 3F 3E 3E 3E 3E 3E
92D8- 3E 3E 3E 3E 3E 3E 3E 36
92E0- 00 40 40 40 40 18 08 2D
92E8- 24 24 3F 36 36 40 09 28
92F0- 25 24 3C 37 36 06 00 49
92F8- 49 2E 2C 24 3F F6 40 00
9300- 00 2D 24 3F 36 00 49 49
9308- 2D 24 3F F6 40 00 40 2D
9310- 24 3F 36 00 49 29 25 2D
9318- 2E 25 2D 2C 2C 24 3C 3C
9320- 3C 27 24 35 35 2D 24 27
9328- 27 3F 3C 37 3F 3C 37 3F
9330- 3E 3E 36 2E 2E 2E 35 36
9338- 27 27 3F 36 35 35 2D 46
9340- 40 2D 24 3C 37 76 40 00
9348- 25 25 27 37 F6 00 40 18
9350- 24 3C 37 36 2D 00 03 24
9358- 3C 3E 2E 2E 00 49 49 29
9360- 2D 24 3F 24 27 3C 24 25

9368- 2C 24 2D 24 3F 37 37 3E
9370- 36 37 36 2E 36 35 2E 06
9378- 00 49 29 2D 2C 24 25 2C
9380- 24 24 27 3C 24 27 3F 37
9388- 2E 35 2E 36 35 3E 36 37
9390- 3E 37 06 00 2D 2D 2D 2D
9398- 2D 2D 24 24 3F 3F 3F 24
93A0- 24 24 24 24 24 3F 3E 3E
93A8- 3E 3E 3E 3E 36 2D 2C 2C
93B0- 2C 2C 36 36 36 3F 3F 3F
93B8- 3F 36 00 2D 2D 2D 2D 2D
93C0- 2D 2D 24 3F 3F 3F 3F 3F
93C8- 27 25 25 25 2D 2D 2D 2C
93D0- 2C 24 24 27 27 3F 3F 3F
93D8- 3F 3F 3E 3E 36 2E 25 2C
93E0- 2C 2D 2D 2D 35 35 3E 3E
93E8- 3F 3F 37 37 37 37 37 37
93F0- 36 00 09 2D 2D 2D 2D 2D
93F8- 2C 2C 24 3C 3C 24 25 25
9400- 24 27 27 3F 3F 3F 3F 3F
9408- 3E 3E 36 2D 2C 2C 2D 2D
9410- 2D 35 35 37 37 3F 3F 3F
9418- 37 2E 2D 2D 2D 2E 2E 3E
9420- 3E 3F 3F 3F 27 27 3F 36
9428- 35 35 00 49 49 49 2D 24
9430- 24 24 2C 2D 24 3F 27 24
9438- 24 3F 36 36 3E 3F 3F 3F
9440- 24 24 3C 37 36 36 36 2D
9448- 2D 2D 2D 35 36 36 36 00
9450- 09 2D 2D 2D 2D 2D 2C 2C
9458- 24 24 3C 3C 3C 3F 3F 3F
9460- 3F 27 24 2D 2D 2D 2D 2D
9468- 2D 24 3F 3F 3F 3F 3F 3F
9470- 3F 36 36 36 2E 2D 2D 2D
9478- 2D 2D 2E 36 3E 3E 3F 3F
9480- 3F 27 27 3F 36 35 35 00
9488- 09 2D 2D 2D 2D 2D 2C 2C
9490- 24 24 27 27 3F 3F 3F 3F
9498- 3E 3E 24 24 2C 2C 2D 2D
94A0- 2D 2D 2E 25 3C 3C 3F 3F
94A8- 3F 3F 3F 3E 3E 36 36 36
94B0- 36 36 35 35 40 2D 2D 2D
94B8- 2D 2C 24 27 3F 3F 3E 3E
94C0- 3E 37 35 00 49 09 2D 2C
94C8- 24 25 2C 24 25 2C 24 25
94D0- 25 3C 3F 3F 3F 3F 3F 3F
94D8- 37 2E 2D 2D 2D 35 35 37
94E0- 36 37 3E 36 37 3E 36 00
94E8- 09 2D 2D 2D 2D 2D 2C 2C
94F0- 24 3C 3C 24 25 25 24 27
94F8- 27 3F 3F 3F 3F 3F 3E 3E
9500- 36 2E 2E 36 37 37 36 35
9508- 35 40 2D 2D 2D 2D 2C 3C
9510- 3C 3C 3F 3F 37 37 37 75
9518- 40 00 18 08 2D 2D 2D 2C
9520- 2C 3C 3C 3F 3F 3F 37 37
9528- 35 35 00 29 2D 2D 2D 2D
9530- 2D 2C 2C 24 24 24 24 24
9538- 27 27 3F 3F 3F 3F 3F 3E
9540- 3E 36 36 2E 2E 2E 2D 2D
9548- 2D 2D 35 3E 3E 3F 3F 3F
9550- 3F 3C 37 2E 06 41 40 00
9558- 18 08 2D 2D 2D 2D 25 24
9560- 3C 3C 3F 3F 37 37 37 36
9568- 35 00 2D 2C 2C 2C 2C 2C
9570- 2C 2C 2C 2C 2C 2C 2C 24
9578- 3F 3E 3E 3E 3E 3E 3E 3E
9580- 3E 3E 3E 3E 3E 36 40 00
9588- 2D 2D 2D 2D 25 25 25 24
9590- 24 24 24 06 03 36 36 36
9598- 37 3F 3F 3F 05 08 03 24
95A0- 24 24 2C 2C 2D 2D 30 48
95A8- 08 3F 3F 3F 3F 37 37 37
95B0- 36 36 36 36 04 00 07 00
95B8- 40 40 40 40 40 40 2E 2C
95C0- 24 3F 36 00 00 87 87 87
95C8- 87 87 87 87 87 87 87 87
95D0- 00 10 00 00 40 00 00 00

Three ways to Speed up your Apple II & Apple IIe for \$295



The SpeedDemon[™] from McT.

Circle 417 on Reader Service card.

- SpeedDemon[™] • Makes any Apple II, II+, or IIe run 3½ times faster.
- SpeedDemon[™] • Makes your Applesoft, Apple Fortran, Word Processing, D.B. Master, Pascal, or VisiCalc programs run up to 3½ times faster.
- SpeedDemon[™] • Costs less than any other speed up card.
- SpeedDemon[™] • Costs only \$295.

Please send me _____ SpeedDemons[™] by return mail at \$295 each. I have enclosed \$ _____
 I have an: ☐ Apple II ☐ Apple II plus ☐ Apple IIe This is for: ☐ Business Use
 Or charge my: ☐ Visa ☐ Mastercard ☐ American Express ☐ Personal Use
 My Acct.# is _____ Expires _____
 Name _____
 Address _____
 City _____ State _____ Zip _____
 Calif. Res. Add 6½% Sales Tax. Mail to: McT • 1745 21st Street • Santa Monica, CA 90404

M·c·T
 A PRODUCT OF
 MICRO COMPUTER TECHNOLOGIES

Dealer Inquiries Invited

Apple is a registered trademark of Apple Computers, Inc. VisiCalc is a registered trademark of VisiCorp, Inc. DB Master is a registered trademark of Stoneware, Inc.

The Apple Clinic

by Earle Hancock

• Cursors—Foiled Again! • Double Display • Resurrecting Track 35

Hello again! Let's dip into this month's mailbag...

The Cursor Blinks— All Else Is Gone!

I am very glad to see do-it-yourself articles for Apple II owners. Most problems probably could be cleaned up easily if we understood our machines and the way they work. My thanks to you and to Wayne Green.

I have an Apple II Plus with 48K, a language card, Grappler card, two disk drives and an Epson printer. At the moment I have two unresolved problems.

Oftentimes I'll leave my Apple with a program stopped at a random point while I perform some household chore. When I return, the cursor is flashing and everything looks O.K., but there is no response to the keyboard—not even to Reset. The only thing left to do is to re-boot and start over.

Have you any idea which part of the circuit might cause this problem? Could the problem be heat-related? Ambient temperature was between 75 and 80 degrees at the time. I have now positioned a small desk fan to the left of the Apple, and the small amount of air circulation has helped.

The second problem is the "on" light at the lower left of the keyboard. Occasionally it flickers, but this doesn't seem to affect the operation of the machine. The electric circuit reserved exclusively for my Apple runs directly to the main house panel. I have observed no other electrical disturbances in the house. If the panel bulb is defective, is there another source of parts other than my friendly Apple dealer?

Finally, can you recommend any books or diagnostic devices I should acquire to help me understand and service my own equipment?

S. Joan
Pontiac, MI

Thank you for your kind words. It's helpful to know we are meeting our readers' needs.

The solution to your first problem—loss of computer function—could be quite complex. If your Apple was being used for business purposes I would strongly recommend replacing the main logic board (motherboard). This would correct the problem quickly and surely. Apple Computer repair procedures make board replacement easy and inexpensive. Board replacement is a "shotgun" approach, but in many cases it may be the best cure.

Since placing a fan near your Apple helped with the problem (I assume it "went south" less often), heat is definitely a factor in the failure. You may want to install a more effective fan (The System Saver from Kensington Microware, for example).

If neither of these ideas appeals to you, the next plan is "chip swapping." Many a good chip and temper have been ruined using this procedure. It will help if you follow some simple rules. Always ground yourself by touching the power supply case inside the Apple. Remember that the computer must be plugged into a grounded wall socket for best results. Proceed in a slow, relaxed, methodical manner. Use an IC extractor and small screwdriver to remove the

chips. Take care not to bend the legs.

You will need a "known good" set of integrated circuits or a working Apple from which to swap. If you can find a friend willing to let you swap parts from his/her computer, more power to you. Where to start is often guesswork. It's wise to use a spray coolant on overheated components.

Off the cuff, this problem sounds like intermittent RAM failure (thanks, Cathy). Use a RAM test program and leave it on "continuous test" to see if your RAM is O.K.

The second problem (power indicator light flashing), as you correctly assumed, does not affect the Apple's operation. The bulb is a 5-volt "wheat" style model with long, thin wire legs. The legs slip into two tubes at the base of the light holder. You must remove both the white "power on" indicator cap (with gentle pressure from a screwdriver) and the bulb to see where the connection is made. The connection is not as tight as it might be; even a small amount of tarnish will cause intermittent or total failure. Remove and carefully clean the legs with alcohol and reinsert them (perhaps doubling the legs over for a more secure fit). Then replace

Earle Hancock has directed the microcomputer project at Minuteman Regional Vocational School, Lexington, MA, for three years. He has served as an advisor to the Massachusetts Association of Vocational Administrators, and is an active member of the Boston Computer Society and other computer organizations. Address correspondence to him c/o in-Cider, Pine St., Peterborough, NH 03458.

BASF QUALIMETRIC™ FLEXYDISKS.® A GUARANTEED LIFETIME OF OUTSTANDING PERFORMANCE.

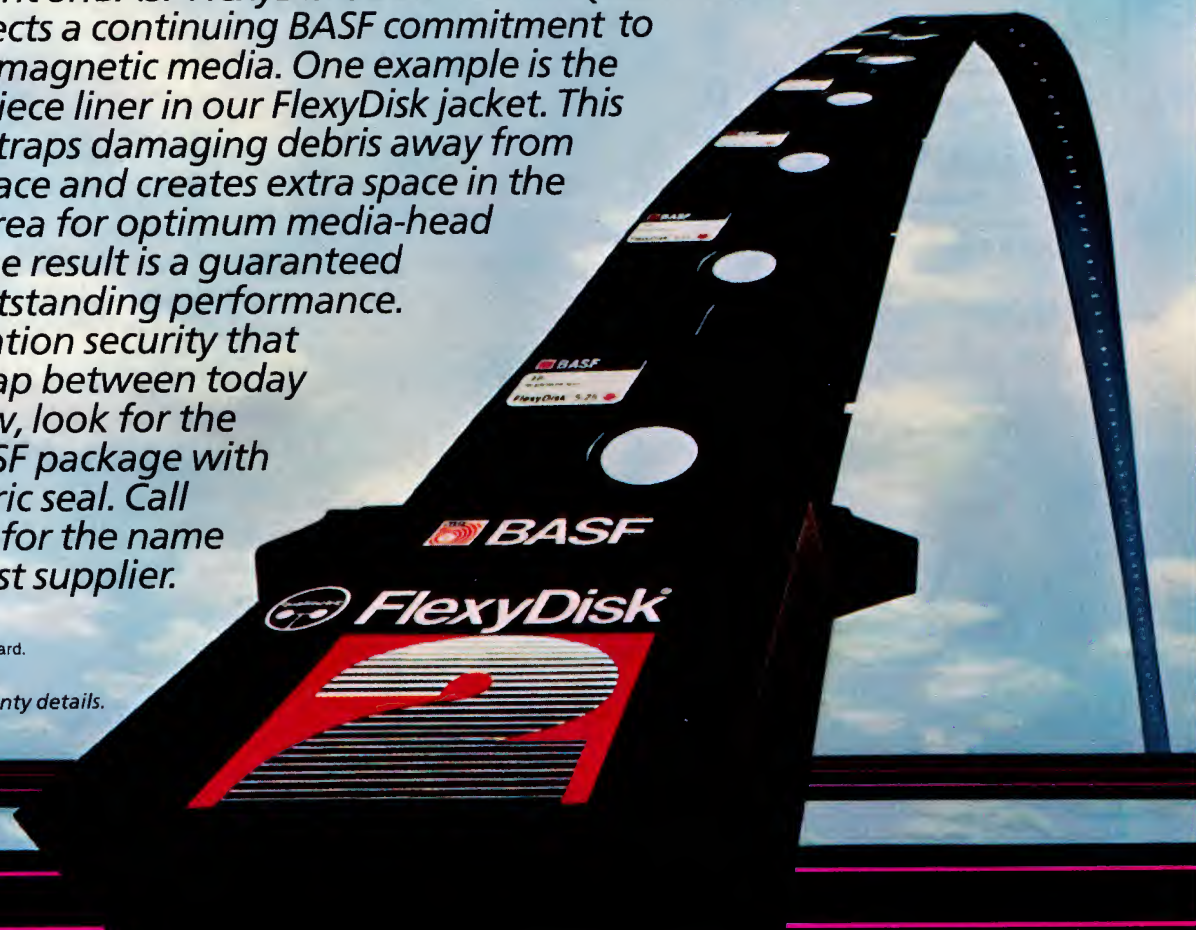
BASF Qualimetric FlexyDisks feature a unique lifetime warranty, firm assurance that the vital information you enter on BASF FlexyDisks today will be secure and unchanged tomorrow. Key to this extraordinary warranted performance is the BASF Qualimetric standard... a totally new set of criteria against which all other magnetic media will be judged.*

You can count on BASF FlexyDisks because the Qualimetric standard reflects a continuing BASF commitment to perfection in magnetic media. One example is the unique two-piece liner in our FlexyDisk jacket. This BASF feature traps damaging debris away from the disk's surface and creates extra space in the head access area for optimum media-head alignment. The result is a guaranteed lifetime of outstanding performance.

For information security that bridges the gap between today and tomorrow, look for the distinctive BASF package with the Qualimetric seal. Call 800-343-4600 for the name of your nearest supplier.

Circle 327 on Reader Service card.

*Contact BASF for warranty details.



ENTER TOMORROW ON BASF TODAY.



BASF

© 1983 BASF Systems Corp., Bedford, MA

Don't wait till it's too late to insure your computer

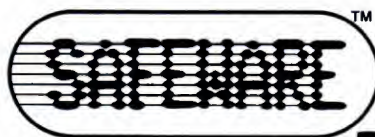
Now you can insure your computer against theft, fire, accidental damage, earthquake, even damage from power surges.

For as little as \$35/yr. SAFEWARE™ covers all hardware, media and purchased software for full replacement after a low \$50 deductible.

To obtain immediate coverage or more information, call toll-free today.

1-800-848-3469

In Ohio call 1-614-262-0559



SAFEWARE, The Insurance Agency Inc.
2929 N. High St., Columbus, Ohio 43202



MAKE YOUR NEW YEARS RESOLUTION AN ALL YEAR REVOLUTION! THE KITCHEN PLANNER



In less than 5 minutes, the Kitchen Planner will help you create and print up to 14 days of balanced meals, PLUS...it will prepare a shopping list for you.

★ EASY TO USE ★ FLEXIBLE ★
★ SAVES TIME ★

- Creates 1 to 14 day menus, single meals or single items from up to 200 of your favorite meal items.
- The only program available that composes balanced meals and lets you change them!
- Compact, usable printout.
- Clear, Concise User's Manual.
- Add or change any meal item or ingredient in the database with ease.
- Reference your favorite cookbooks and recipes.

TESTED AND GUARANTEED

Send Check or Money Order to

SAV-SOFT PRODUCTS

P.O. Box 24898

San Jose, CA 95154

(add \$1.50 handling; in CA add 6½%)

VISA, MC call : (408) 978-1048

48 K Apple II, II+, IIe, 1 disk, printer
Apple is a trademark of Apple Computer, Inc

\$29⁹⁵

Pilots asked us for it.
Pilots and nonpilots will love it!

Fly Us!



We are pleased to present our new

AIRSIM-3 Airplane Simulator . . .

Ground scenery: San Diego to San Francisco with many airfields.

Aerobatic: Loops, rolls, stalls and more.

Instrumentation: Standard basic instrument panel, plus everything required for instrument flying. HSI, ADF, VOR's, NDB's, approach markers, ILS, DME, radar.

User definable: Set up your own navigational situations, with runway scenery, wind conditions and nav-aid locations.

Educational: Special features for exploring navigational-instrument behavior.

Engine sound if Mockingboard (not included) is installed.

Optional Feature: Store flight data in RAM card. Useful for research purposes. Contact us for details.

Apple II, II+, IIe, Apple III In Apple II emulation mode. 48K RAM, paddles or joystick. Recommended for ages 14 to Adult.

\$44.95 Mass. residents add 5% sales tax. Overseas shipping add \$5.00. See your dealer or contact us directly. Visa, Mastercard.

ALSO AVAILABLE:

AIRSIM-1
Flight Simulator

now \$24.95



\$40.00

**Mind
systems**
corporation

P.O. Box 506
Northampton, MA 01061
(413) 586-6463

Copyright © 1983 by
Mind Systems Corporation

Trademarks:
Apple, Apple Computer Co.
Mockingboard, Sweet Micro Systems
AIRSIM, Mind Systems Corporation

the white cap. Apple IIe owners must remove the case to reach the bulb and socket in the keyboard.

In the January *inCider* I briefly reviewed two diagnostic packages for the Apple II Plus (see page 172). Microcomputer repair books are difficult to find. One that comes to mind is *Don't—Or How to Care for Your Computer* by Rodney Zaks, published by Sybex, 2344 Sixth Street, Berkeley, CA 94710. This is a general overview of computer care and does not offer model specific repair instructions. It does, however, present in a clear and humorous way steps to follow to help insure "years of trouble-free operation."

For more theory-oriented readers I recommend the *Heathkit Electronics Learning Dictionary*, published by the Heath Co., Benton Harbor, MI 49022. It contains definitions of approximately 20,000 terms unique to electronics and related fields. It's a well-written and useful reference.

Your best bet (ahem) is to continue to read *The Apple Clinic*!

Double Display 256 Spaces Away

I have a problem with 70/80 column display on my Amdek Color II monitor with the 80-column card and with software-driven display. When I input data, I get a cursor and a second display of the same typed input 256 spaces away.

Amdek sent me a new RGB card, but I still get a double display. Apple and Videx had no solution either. By substitution I have attributed the problem to either the Amdek card or monitor.

Thank you in advance for your help.

D. Pulsipher
Warson Woods, MO

Problems like this are difficult; there are so many variables to consider. No cause jumps to mind that would create the "double display." However, I can suggest a method for narrowing the possible causes down to a manageable few.

The combination of parts in a computer system can, collectively, cause unexpected things to happen. When I encounter a strange new problem like yours, I remove as many interface cards and system accessories as possible. In your case I recommend that you connect a composite video monitor to your Apple (preferably one that is "known good").

Remove all cards, including the disk interface. Test this combination by typing each key and verifying same on screen. If it works, add the disk interface and disk, test the key-

"The combination of parts in a computer system can, collectively, cause unexpected things to happen."

board again and test all the RAM and ROM using a test package, or have your dealer run the test. Assuming all goes well, you'll have determined that the Apple and its composite video are O.K.

Now add the 80-column card, plug the "known good" monitor into the card and test. Still O.K.? If so, remove the Videx card and set up the RGB card and Amdek monitor and test again. If all is well with the 80-column card and the "known good" monitor, and if the RGB card and monitor (without the 80-column card installed) are good, your problem sounds like a weird compatibility issue. My guess is that you will find a problem along the way that if corrected will solve the whole situation.

During all the card swapping and such, remember to turn off the power before adding or removing cards. Not doing so could be very damaging to your Apple.

I've never been a fan of RGB monitors for 80-column text work (see January's *Apple Clinic*), but surely this "double display" problem is more than a preference issue. Keep me posted.

More Storage Space, Please

Can the alignment stopper (or some other piece on the older Apple or Shugart drives) be easily changed to allow track 35, or tracks 35-39, to be initialized? I assume the alignment stopper is the problem. Also, what about half-tracking to get double density (70-track) disks? Is this controlled by hardware or software? Such capability would be especially useful for lower cost back-up libraries.

R. Moredock
Campbell, CA

The Apple II disk drives, old and new, can actually step the read/write head 70 increments in the space of the "window" opening in the disk. Because of the width of the read/write head, however, it is not possible to select each of the 70 tracks without overwriting the space reserved for the next track.

What the disk operating system (DOS) does is to step the read/write head twice for each track on the disk. The result is the 35 tracks we are used to. If the read/write head were narrower, and if DOS were modified to step the head once for each track, we

Circle 140 on Reader Service card.



- Stores 100 Disks, Dust Free
- 25 Disk Titles Clearly Visible
- Fast, Easy Access, Stackable
- Top Flips Back, Locks Upright

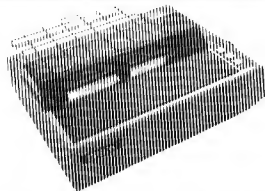
RULE ONE \$995 Add \$1.50
42 Oliver Street Dept. B Postage & Handling
Newark, N.J. 07105 Cash, check or M.O. No C.O.D.'s

SAVE AT ELEK-TEK ON PRINTERS

HUGE SAVINGS ON ALL EPSON PRINTERS

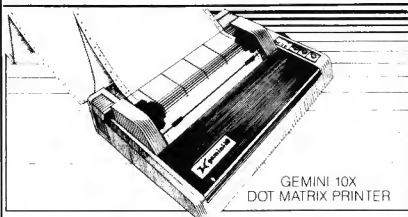
MX 80 FT MX 100
FX 80 FX 100

CALL FOR SUPER LOW PRICES



EPSON RX-80 275.00

8750 Ribbon Cartridges for Epson
80 Column Printers 4.00
8755 Ribbon Cartridges for Epson
132 Column Printers 7.00



GEMINI 10X
DOT MATRIX PRINTER

GEMINI 10X \$275.00

GEMINI 15

15 in. wide carriage
\$399.00

NEW HIGH SPEED DELTA 10 — call for price

Gem D1 Ribbons for Gemini Printers—6 for 15.00
12 for 24.00

Cables for Epson or Gemini

PA10A 10 ft. 36/36 pin
standard parallel 30.00
IB-P10 10 ft. 36/25 pin parallel
for IBM 32.00
PA6T 6 ft. 36/16 pin parallel
for TI-99/4A 25.00
RS10A 10 ft. 25 pin
standard RS-232C (full loaded) 21.00
RS1Y RS-232 Y cable for TI-99/4A 35.00

PRINTER INTERFACES DISCOUNTED TOO!

LETTER QUALITY PRINTERS

\$500—\$1,550

TTX — COMREX — DIABLO

CALL TOLL FREE 800-621-1269
EXCEPT Illinois, Alaska, Hawaii

Corp. Accts. invited. Min Ord. \$15.00 Mastercard or Visa by
mail or phone. Mail Cashier's Check, Money Ord., Pers. Check (2 wks
to clir.) Add \$4.00 1st item. (AK, HI, P.R., Canada add \$10.00
first item) \$1.00 ea. add'l shpg. & handl. Shipments to IL address
add 6% tax. Prices subj. to change. **WRITE for free catalog.**
Return policy for defective on arrival replacements only: 90
day mfr. wty. **ALL ELEK-TEK MERCHANDISE IS BRAND
NEW, FIRST QUALITY AND COMPLETE.**



ELEK-TEK, Inc.
6557 N. Lincoln Ave., Chicago IL 60645
(800) 621-1269 (312) 677-7660

The Apple Clinic

indeed could have 70 tracks or twice the storage space.

The confusion regarding how many tracks an Apple II drive can use arises, I believe, from a procedure called "half-tracking." Half-tracking is one of many protection schemes devised to keep users from copying disks.

Half-tracking shifts the start of each track to a position 1/2-step away. Tracks once labeled 0, 1, 2, ... 34 are then labeled 0.5, 1.5, 2.5, ... 34.5. No space is gained on the disk. Many people falsely assume that half-tracking means a new track is written in between each existing track, yielding 35 new tracks.

Bob Brownhill's excellent article, "Disk Space—The Final Frontier," in the November *inCider* explains how to get at track 35 (the 36th track). It requires a modification to DOS; therefore, it is software-controlled.

A New Adventure Game— Find the Cursor

The cursor on my Apple II Plus no longer appears on the screen. We replaced the 555 cursor flasher I/C at position B3 in accordance with our Apple II (Jan. 1978) Reference Manual, but that did not correct the problem. When I called the service department, they told me it involved removal of the motherboard which would cost \$50.

Can you be of any help in this matter?

L.A. Duff
Palmyra, NJ

One computer has nothing but the flashing cursor and another has everything except the cursor. Who said computing was dull?

You appear to have done the right thing by replacing the 555 cursor flasher I/C. It may be that the replacement is defective. To be safe, try replacing I/Cs one at a time, testing for results with each replacement.

If you don't know how to locate I/Cs on the motherboard, the "B" refers to row B and the "3" to column 3.

There are 9 rows, A to K, and 14 columns, 1 to 14, on the Apple II and II Plus motherboards. Locating an I/C is like finding a cell in VisiCalc, except A1 is in the lower left corner—not the upper left. You often will find an I/C referred to by both the number of the chip and its position on the board.

Here are the I/Cs to try: 74166-A3, 74S86-B2, 74LS08-B11, and 74LS02-B13. One of these should solve the case of the missing cursor.

By the way, your dealer's estimate of \$50 for repair of this problem seems fair. You may wish to let him/her do the work for you.

"One computer has nothing but the flashing cursor and another has everything ex- cept the cursor. Who said computing is dull?"

Too Much of a Good Thing

My Apple II Plus has developed a most aggravating condition. For the first five minutes or so after I turn the computer on, some of the keys auto repeat. The letter "T" is the most troublesome offender. This condition developed about eight months after I bought the computer.

Sometimes a letter will repeat itself three or four times after a normal keystroke. After the computer has been on for five minutes or so, the problem goes away and the letters no longer auto repeat.

I've received conflicting advice from two local repair places. One tells me I need a new keyboard—the other tells me I need a new encoder board.

Any light you can shed on this matter would be greatly appreciated.

T. Broughton
San Juan Capistrano, CA

The problem you describe is almost certainly the result of a malfunctioning encoder board.

The keyboard on an Apple II and II Plus sends messages (the keypress) to the encoder board, a small auxiliary board attached to the underside of the keyboard. In turn, the encoder board sends the keypress to the motherboard via the 16-pin connector plugged into position A7.

If the keyboard were at fault, you would have trouble with one or a few keys, but the rest would work correctly. I am a bit suspicious of the "T" key giving you more trouble than the rest. That key may need to be replaced.

Somewhere in the encoder board's circuit is a component or a trace that is sensitive to cold. You could find the exact problem by spraying a diagnostic aid referred to as "cold spray." When the defective area is cooled off, the auto repeat problem should show up. Repeat the process several times to verify that you've found the problem. This procedure is not for beginners, so if you decide to try it, do so with caution!

My recommendation is to have the dealer who suggested a new encoder board fix the computer for you. It will probably be fixed faster, and Apple guarantees the new part for 90 days.

Many Requests for this Information

I just read your article in inCider about disk drive repair. I enjoyed it and would like to learn more.

I am the computer "expert" in our high school of 250 students. I have set up a room with 11 Apple IIe computers to implement a program of programming and computer assisted learning. I also have become the resident "technician" because Harbor Springs is located in northern Michigan (read isolation). I have an electronics background in ham radio and feel that I could solve many minor computer repair problems.

Please recommend a good repair guide. List any special tools which may help. What about diagnostic equipment? Where can I get specific technical information? Who is the best supplier of parts?

B. Slotnick
Harbor Springs, MI

The Apple Clinic received many letters this month asking the same question: What do I do to get ready for the inevitable?

Even though this column is devoted to self-help repair, many people never have had a repair problem with their equipment. The school where I work has 40 Apples or Apple work-alikes. Sometimes several months go by without any trouble. But back to the inevitable.

I know of no books or guides specific to microcomputer or disk drive repair currently on the market, although the previously mentioned general information books may be useful.

Tool selection is largely a personal issue. Some people, like me, see tools as works of art and must have just the right tool for the job. Others take a more utilitarian view and can make do very nicely with a minimum selection. Flat blade and Phillips head screwdrivers, a set of watch screwdrivers (Archer makes a set sold in Radio Shack stores), a 20 thousandths-inch feeler gauge, an IC extractor, a pair or two of needlenose pliers, and a soldering gun and solder sucker should be enough to get you started.

For specific technical information I recommend the *Apple II Reference Manual* (Apple part #A2L0001A [030-0004-01]). Apple IIe owners will have to wait for someone to publish a reference manual for them.

The best supplier of parts and helpful hints is your Apple dealer. Even if the dealer is far away, it definitely pays to establish a good working relationship with the dealer and his repair technician. Explain your particular situation to them and enlist their cooperation. This relationship can be extremely helpful to you and beneficial to the dealer as well.

Keep Those Cards and Letters Coming

Response to The Apple Clinic has been gratifying. Do you have a problem with your Apple? Explain it to me and perhaps I can help. I'm waiting to hear from you! ■

CALL OR WRITE TODAY!

ELEPHANT DISKS

SS/SD \$16.95
10 @ ...

SS/DD \$19.95
10 @ ...

DS/DD \$25.95
10 @ ...

Inventory Selections
...just to name a few!
(We also have IBM, Atari and Commodore to keep your Hardware on the "FAS-TRACK")

ULTIMA III	\$36.95
BEAGLE BAG	19.95
FLEX TEXT	19.95
FRAME-UP	19.95
TIP DISK #1 OR TYPEFACES	13.95
BOUNCING KAMUNGAS	13.95
PLANETFALL OR ENCHANTER	32.95
MOST AMAZING THING	26.95
COVETED MIRROR OR MINIT MAN	13.95
SNOOPER TROOPS 1 OR 2	29.95
QUEST OR TRANSYLVANIA	13.95
LODE RUNNER	23.95
COSMIC BALANCE I OR II	EA. 25.95
ZORK I, II OR III	EA. 24.95
DEADLINE, SUSPENDED OR WITNESS	32.95
STARCROSS	25.95
STELLAR 7	24.95
WIZARDRY	32.95
KNIGHT OF DIAMONDS	22.95
ZAXXON	25.95
PFS: FILE	79.95
PFS: REPORT	79.95
PFS: GRAPH	79.95
PFS: WRITE	79.95
RHYMES & RIDDLES	20.95
LEGACY OF LLYLGAMYN	26.95
CHIVALRY	26.95
STICKY BEAR SHAPES	26.95
MINER 2049ER	25.95
STICKY BEAR OPPOSITES	26.95
LEARNING WITH LEEPER	24.95
STICKY BEAR BASKETBOUNCE	26.95
GRAPHICS MAGICIAN	38.95
STICKY BEAR BOP	26.95
STICKY BEAR NUMBERS	26.95
STICKY BEAR ABC	26.95
FACE MAKER	22.95
STORY MACHINE	22.95
BANK STREET WRITER	43.95
CAVERNS OF CALLISTO	22.95
SENSIBLE SPELLER	78.95
SCREEN WRITER II	81.95
ESSENTIAL DATA DUPLICATOR	55.95
SARGON III	34.95
PRONTO DOS	19.95
DOUBLE TAKE	22.95
ALPHA PLOT	24.95
APPLE MECHANIC	19.95
BEAGLE BASIC	23.95
DOS BOSS	15.95
HOME ACCOUNTANT	47.95
THE GENERAL MANAGER II	148.95
VISICALC 3.3	164.95
KOALA PAD	87.95
VISITREND/PLOT	198.95
INCREDIBLE JACK	124.95
UTILITY CITY OR DISKQUICK	19.95
GP/E	32.95
ZARDAX	154.95
COPY II PLUS	22.95
MAGIC WINDOW II	93.95
HOMEWORD	34.95
ORCA/M	99.95
WORDSTAR	268.95

Personal checks allow 2 weeks. We accept Visa & MasterCard (add 3% for handling). Send or call with card # & exp. date. Include \$2.00 for shipping. Ohio residents add 5 1/2% state sales tax. Prices are subject to change without notice.

FAS-TRACK
COMPUTER PRODUCTS

Box 456
Columbus, Ohio 43216
(614) 863-1699
OR TOLL-FREE OUTSIDE OHIO
1-800-272-1600

Get Control of Your Apple Dot Matrix Printer

by Hobart S. Cable, II

```
[V]ESCn[V] This is 9 cpi NORMAL print.
[V]ESC! [V] This is 9 cpi BOLD print.
[V]ESC" [N] [V] This is 9 cpi ELONGATED print.
[V]ESC! [V] This is 9 cpi BOLD ELONGATED print.
[V]ESC" [O] ESCn [V] This is 10 cpi Pica NORMAL print.
[V]ESC! [V] This is 10 cpi Pica BOLD print.
[V]ESC" [N] [V] This is 10 cpi Pica ELONGATED print.
[V]ESC! [V] This is 10 cpi Pica BOLD ELONGATED print.
[V]ESC" [O] ESCe [V] This is 12 cpi Elite NORMAL print.
[V]ESC! [V] This is 12 cpi Elite BOLD print.
[V]ESC" [N] [V] This is 12 cpi Elite ELONGATED print.
[V]ESC! [V] This is 12 cpi Elite BOLD ELONGATED print.
[V]ESC" [O] ESCq [V] This is 15 cpi NORMAL print.
[V]ESC! [V] This is 15 cpi BOLD print.
[V]ESC" [N] [V] This is 15 cpi ELONGATED print.
[V]ESC! [V] This is 15 cpi BOLD ELONGATED print.
[V]ESC" [O] ESCQ [V] This is 17 cpi NORMAL print.
[V]ESC! [V] This is 17 cpi BOLD print.
[V]ESC" [N] [V] This is 17 cpi ELONGATED print.
[V]ESC! [V] This is 17 cpi BOLD ELONGATED print.
[V]ESC" [O] ESCp [V] This is Proportional-1 NORMAL print.
[V]ESC! [V] This is Proportional-1 BOLD print.
[V]ESC" [N] [V] This is Proportional-1 ELONGATED print.
[V]ESC! [V] This is Proportional-1 BOLD ELONGATED print.
[V]ESC" [O] ESCp [V] This is Proportional-2 NORMAL print.
[V]ESC! [V] This is Proportional-2 BOLD print.
[V]ESC" [N] [V] This is Proportional-2 ELONGATED print.
[V]ESC! [V] This is Proportional-2 BOLD ELONGATED print.
[V]ESC" [O] ESCn [L] [V]
```

Figure 1. Print mode test file.

```
This is 9 cpi NORMAL print.
This is 9 cpi BOLD print.
This is 9 cpi ELONGATED print.
This is 9 cpi BOLD ELONGATED print.
This is 10 cpi Pica NORMAL print.
This is 10 cpi Pica BOLD print.
This is 10 cpi Pica ELONGATED print.
```

Figure 2 continued.

When I purchased my Apple III system recently, one of my first priorities was to get the Apple Dot Matrix Printer (they're calling it the "DMP") up and running. This would seem to be a simple task, but the Operator's Guide is really only an installation manual, and the Reference Card is short on instructions. (The people at Apple Computer have assured me that an in-depth DMP manual is being printed and will be available soon.) After wrestling with the best way to configure the printer with the internal DIP switches (you must be sure to turn the printer off and back on for new settings to be effective), I turned to testing the various print modes available.

The file shown in Figure 1 is the result. If you combine the DMP's four different print styles with its seven print sizes, you have 28 possible print modes. These are all demonstrated in this exercise.

While this is an Apple Writer III text file developed on my Apple III, it can be easily adapted for Apple Writer II on the Apple II. You should configure the Apple Writer Print/Program menu for normal printing, with double spacing.

In Figure 1 I have used the standard Apple Writer notation, where [V] means control-V, and so on. ESC stands for the escape key. Note that certain mode changes do not use

Address correspondence to Hobart S. Cable, II, HQ AFSC, SMR-General Delivery, Andrews AFB, MD 20334.

Raise your Apple's IQ Twelve Times A Year!



Subscribe Now & Save \$12.00 off the Cover Price!

A one-year subscription to NIBBLE brings you twelve issues packed with programs and comprehensive articles to help you get the best out of your Apple.

You'll get over \$500 worth of programs for Home, Business, Education and Entertainment with complete instructions. Nibble articles show what each program does, how to use it and enter it into your Apple, Franklin ACE or other Applesoft-compatible computer.

You'll enjoy regular features for the beginner as well as the expert. Among

these are the Educational Corner, where programs help make learning fun, Tips & Techniques which showcases little-known programming tricks, Utilities to facilitate Basic, DOS & Printing, and Games with arcade fun you can type and run.

Try a NIBBLE!

Here's what some of our Readers say:

- ☐ "Certainly the best magazine on the Apple!"
- ☐ "Programs remarkably easy to enter."
- ☐ "Your service is fantastic . . . as a matter of fact, I'm amazed!"

Apple® is a registered trademark of Apple Computer, Inc.
ACE® is a registered trademark of Franklin Computer, Inc.

Note

- ☐ Canada surface subscription rate is \$34.95
 - ☐ Outside the U.S. and Canada surface subscription rate is \$39.95
 - ☐ Domestic U.S. First Class subscription rate is \$51.95
 - ☐ Canada Air Mail subscription rate is \$59.95
 - ☐ Outside the U.S. and Canada Air Mail subscription rate is \$89.95
- All payments must be in U.S. funds drawn on a U.S. bank.

Join the more than
120,000 Apple/ACE
users who say:

"NIBBLE is terrific!"

nibble



We accept Master Charge & Visa

Box 325, Lincoln, MA 01773 (617) 259-9710

I'll try nibble!

Enclosed is my \$26.95 (for 12 issues)

(Outside U.S., see special note on this page.)

☐ check ☐ money order

☐ bill me (U.S. only)

Your subscription will begin with the next issue published after receipt of your check/money order.

Card # _____ Expires _____

PLEASE PRINT CLEARLY

Signature _____

Name _____

Address _____

City _____

State _____ Zip _____

Figure 2 continued.

This is 10 cpi Pica BOLD ELONGATED print
 This is 12 cpi Elite NORMAL print.
 This is 12 cpi Elite BOLD print.
 This is 12 cpi Elite ELONGATED print.
 This is 12 cpi Elite BOLD ELONGATED print.
 This is 15 cpi NORMAL print.
 This is 15 cpi BOLD print.
 This is 15 cpi ELONGATED print.
 This is 15 cpi BOLD ELONGATED print.
 This is 17 cpi NORMAL print.
 This is 17 cpi BOLD print.
 This is 17 cpi ELONGATED print.
 This is 17 cpi BOLD ELONGATED print.
 This is Proportional-1 NORMAL print.
 This is Proportional-1 BOLD print.
 This is Proportional-1 ELONGATED print.
 This is Proportional-1 BOLD ELONGATED print.
 This is Proportional-2 NORMAL print.
 This is Proportional-2 BOLD print.
 This is Proportional-2 ELONGATED print.
 This is Proportional-2 BOLD ELONGATED print.

lects "bold" and [O] deselects "elongated" from the previous line, ESCN selects 10 cpi Pica, and the final [V] terminates control codes.

If you make an Apple Writer text file as in Figure 1 and send it to the printer, the result should be as shown in Figure 2. The last line in Figure 1 resets the printer for normal print and advances to the next page. Be sure to use the control key instead of the brackets for typing each control code. You can also add a sample character set to each mode as in Figure 3. Switch to single spacing if you want to get it all on one page.

This exercise is far from a complete demonstration of the many capabilities of the Apple DMP. Using these same techniques you can experiment further and exercise additional features of this versatile printer. ■

ESC. Where the Reference Card shows the ASCII SO and SI values, you must use the equivalent control characters, N and O.

The Apple Writer [V] mode allows entry of control codes into a normal text file, and that is how this exercise configures the DMP for the demonstration. Using the fifth line of Figure 1 as an example, the first [V] initiates the control code feature, ESC" dese-

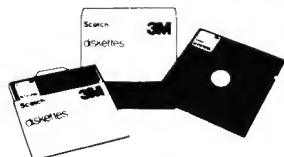
This is 9 cpi NORMAL print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 9 cpi BOLD print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 9 cpi ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 9 cpi BOLD ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 10 cpi Pica NORMAL print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 10 cpi Pica BOLD print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 10 cpi Pica ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 10 cpi Pica BOLD ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 12 cpi Elite NORMAL print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 12 cpi Elite BOLD print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 12 cpi Elite ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 12 cpi Elite BOLD ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 15 cpi NORMAL print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 15 cpi BOLD print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 15 cpi ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 15 cpi BOLD ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 17 cpi NORMAL print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 17 cpi BOLD print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 17 cpi ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is 17 cpi BOLD ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-1 NORMAL print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-1 BOLD print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-1 ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-1 BOLD ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-2 NORMAL print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-2 BOLD print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-2 ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
 This is Proportional-2 BOLD ELONGATED print.
 0123456789ABCDEFGHIJKLMN0PQRSTUVWXYZabcdefghijklmnopqrstuvwxyz

Figure 3. Printout from test file, with sample character set.

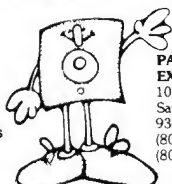
Circle 31 on Reader Service card.

Scotch® Diskettes

Rely on Scotch® diskettes to keep your valuable data safe. Dependable Scotch diskettes are tested and guaranteed error-free. The low abrasivity saves your read/write heads. They're compatible with most diskette drives.

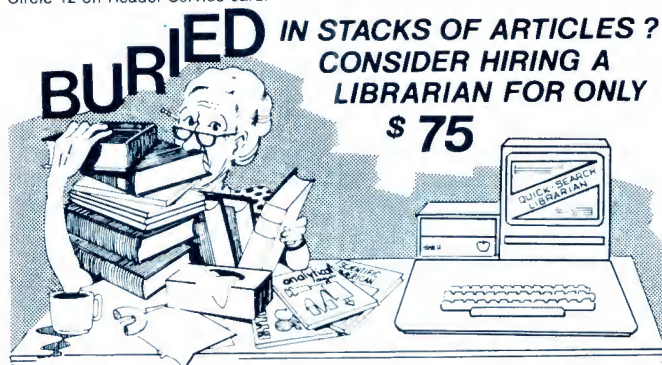


(800)235-4137



PACIFIC EXCHANGES
 100 Foothill Blvd.
 San Luis Obispo, CA
 93401. In Cal. call
 (800) 592-5935 or
 (805) 543-1037.

Dealer Inquiries
 Invited



Quick Search Librarian (QSL) makes it easy to enter and edit your journal references, search for articles, and print or sort a list of articles using the 48K APPLE* II + computer. Important QSL features include:

- Two keystrokes select any one of 255 keywords or any one of 255 journal titles.
- Four lines available for listing authors, title and/or comments.
- Powerful data base screen editing, copying and merging features.
- Average search speed is 50 articles/second with multiple criteria; average sorting speed is 40 articles/second when sorting on 3 fields.
- Typically, 1000 articles can be stored on a single disk.
- Includes sample data base and tutorial for *Scientific American*, 1981.

VISA or Mastercard orders accepted. QSL manual available separately for \$5. (Price of manual deductible later with purchase of QSL software.) Add \$1.50 for shipments made in U.S.A.

* Trademark of Apple Computer, Inc.



INTERACTIVE MICROWARE, INC.

P.O. Box 771, Dept. 52

State College, PA 16801, (814) 238-8294

Circle 161 on Reader Service card.

Travel With Your Apple... Call (800) 847-4176!



ABS Storage
& Carrying Case
with
Removable Cover
\$69.50*

*UPS Shipping Included.

Apple • IBM • Epson

Call for Complete Computer Case Catalog.
Credit Card Customers Call Toll Free

Fiberbilt

Ikelheimer-Ernst, Inc.
601 West 26th Street
New York, New York 10001-1199
(212) 675-5820 (N.Y. State)



Gladly accepted

Apple II/IIe

If This Powerful Applesoft Editor Were Any Simpler, Your Keyboard Could Look Like This.

Meet the word processor for writing programs, complete with HELP Screens for quick reference.

With GALE (Global Applesoft Line Editor), single keys stand for long, complicated sequences of programming commands. Now you can automatically insert or delete changes in program lines. Or change a character or word wherever it appears. And no more re-typing the rest of a line after a change. So you spend significantly less time typing.

GALE eliminates dozens of keystroking operations while it lets you instantly renumber your program lines, or take two programs and merge them. Or see how much space is left on your disk.

You'll like the immediate cross-index of all your variable names, auto-line numbering and other valuable utilities.

With GALE you get the best features of a separate global editor, renumber, merge and utility library all combined in one system.

GALE! You'll wonder how you ever got along without it.

To order fill out the attached coupon or call 617-259-9710.

Author: Sandy Mossberg

System Requirements: Applesoft compatibility and DOS 3.3

Apple is a registered trademark of Apple Computer, Inc.

Copyright © 1983 by MicroSPARC.



MicroSPARC Inc.

I want GALE! Here's my \$49.95

☐ Mastercard ☐ Visa ☐ Check, M. O.
(Mass. residents add 5% sales tax)

Name _____ Tel. # _____

Address _____

City _____ State _____ Zip _____

Signature _____ Date _____

Charge Card # _____ Exp. Date _____

MicroSPARC Inc., 10 Lewis St., Lincoln, MA 01733

Precision Dumping

by L. S. Reich

Several Applesoft and assembly language programs for text screen dumping to printer have recently been presented for the Apple II. However, none of these programs has any provision for controlling the amount of text screen display that is dumped. Thus, for example, if the upper portion of the display consists only of a few lines and the remainder of the screen is blank, that's what the printout will look like. Such lack of printer control is often undesirable and irksome.

In this report, an assembly language program (ASL) and a corresponding Applesoft Basic (ASB) program are presented which allow the user to precisely control the amount

of text screen display that is dumped to printer.

The ASL Program

Listing 1 shows an assembly language program for controlling the amount of text screen dump to an Epson printer. This program should also be applicable to other printers with cards equivalent to the Apple II parallel interface card.

In lines 34-46, input hooks (KSWL/H) are set so that text screen printing will commence when a control-P is detected while in monitor mode. Also, registers A, X, Y and P are saved along with the horizontal cursor position (CH) in lines 48-50. Printer parameters are then em-

ployed which are applicable to an Apple parallel printer interface in slot #1 or an equivalent interface (lines 51-54). These parameters are stored inside the screen buffer memory between \$0400-\$07FF, but are in bytes that are not displayed.

Lines 56-60 start the determination of text screen contents. Inverse or flashing characters are converted to normal ASCII codes for printing (lines 61-65). Lines 61 and 67-89 test for either a blank space or blank line followed by the marker REM* beginning at the leftmost position of the very next line (no prompt). If such a marker is detected, CH and the registers are restored and printing stops (lines 110-114).

However, if the preceding conditions are not met, printing is restored and the Y register acts as a column counter and the X register as a line counter (lines 94-108). When the end of a line is reached a carriage return is printed and another line may be printed, provided the end of the screen has not been reached or the "stop printing" conditions have not been met.

The ASB Program

An Applesoft Basic program corresponding to the assembler program is depicted in Listing 2. This listing employs Lam's routine (reference 6) to enter values into the monitor from Basic. The input hooks are set in line 40. Thus, an assembler program may be stored as part of a Basic program.

The marker REM* was used to limit the amount of text screen dumping to

Listing 1. Assembly language program.

```

4 *****
5 *
6 *CONTROLLING THE AMOUNT OF *
7 *SCRN-DUMP TO EPSON PRINTER*
8 *
9 *COPY LIMIT MARKER: AT END,*
10 *USE BLANK LINE FOLLOWED BY*
11 *'REM*' AT LEFTMOST MARGIN *
12 *(NO PROMPT)
13 *
14 *'BRUN (THIS PGM NAME).OBJ'*
15 *THEN, IN MON, USE CTRL-P; *
16 *FROM A-BASIC, CALL-32742 *
17 *
18 ****BY L.S. REICH **** 3/83*
19 *
20 *****
21 *
22 CH      =    $24
23 BASL    =    $28
24 BASCAL  =    $FBC1
25 VTAB    =    $FC22
26 RDKEY   =    $FDOC
27 KEYIN   =    $FD1B
28 DOSHOK  =    $3EA
29 SLOT    =    1
30 PRINT   =    $C102
31 COUNT   =    $5F8+SLOT
32 NOVID   =    $778+SLOT
33 *
34          LDA    #<PRNT
35          STA    $38          ; SET
36          LDA    #>PRNT      ; INPUT
37          STA    $39          ; HOOKS
38000: A9 0C
38002: 85 38
38004: A9 80
38006: 85 39

```

Address correspondence to L.S. Reich, 3 Westman Drive, West Orange, NJ 07052.



1984 OFFICE AUTOMATION CONFERENCE®



**LOS ANGELES CONVENTION CENTER • CALIFORNIA
FEBRUARY 20-22, 1984**

SPONSORED BY AMERICAN FEDERATION OF INFORMATION PROCESSING SOCIETIES, INC.

OFFICE AUTOMATION & YOU

The 1984 Office Automation Conference, "Office Automation & You," will highlight the most recent advances in OA, as they affect your role as a professional, manager, or user. This is YOUR conference.

OAC '84, the leading annual conference in the office automation industry, offers you the opportunity to:

- * Learn more about OA; with over 45 Program Sessions, 8 in-depth Professional Development Seminars, and 6 Industry Workshops.
- * Hear authoritative speakers, including Keynote—David T. Kearns, President & CEO of Xerox Corporation.
- * See more than 150 major companies exhibiting their products & services.
- * View numerous new products and developments introduced at OAC.
- * Evaluate and compare specific products and services.

For additional information, complete the coupon below and send to:
OAC '84, AFIPS, 1899 Preston White Drive, Reston, VA 22091.

Or, REGISTER TODAY via our toll-free number: 800-OAC-1984, using American Express, MasterCard, or Visa.

For more information, mail this coupon today

Name: _____
Title: _____
Company: _____
Address: _____
City: _____ State: _____ Zip: _____

Mail to:

OAC '84
AFIPS
1899 Preston White Dr.
Reston, VA 22091



5 7

GOLEM COMPUTERS

30% OFF

APPLE SOFTWARE

PLACE ORDERS TOLL FREE

1-800-345-8112

PA 1-800-662-2444

ARCADE	LIST PRICE	GOLEM PRICE
ZAXXON	39.95	27.97
CHOPFLIFTER	34.95	24.47
FROGGER	34.95	24.47
AZTEC	39.95	27.97
PINBALL CONSTRUCTION SET	39.95	27.97
LODE RUNNER	34.95	24.47
AE	34.95	24.47
MINER 2049er	40.00	28.00
ADVENTURE		
ZORK I	39.95	27.97
ZORK II	39.95	27.97
WITNESS	49.95	34.97
DEADLINE	49.95	34.97
STRATEGY		
FLIGHT SIMULATOR	33.50	23.45
CASTLE WOLFENSTEIN	29.95	20.97
SARGON II	34.95	24.47
FANTASY		
WIZARDRY	49.95	34.97
ULTIMA II	59.95	41.97
KNIGHT OF DIAMONDS	39.95	24.47
TEMPLE OF ASPHA I	39.95	27.97
ALI-BABA/FORTY THIEVES	32.95	23.07
HOBBY		
GRAPHICS MAGICIAN	59.95	41.97
UTILITY CITY	29.50	20.65
ZOOM GRAPHICS	49.95	34.97
DOUBLE TAKE	34.95	24.47
APPLE MECHANIC	29.95	20.97
BAG OF TRICKS	39.95	27.97
PRONTO DOS	29.95	20.97
DOS BOSS	24.00	16.80
HOME		
HOME ACCOUNTANT	74.95	52.47
ASCII EXPRESS: THE PROFESS	129.95	90.97
HAYES TERMINAL PROGRAM	99.00	69.30
DATA CAPTURE 4.0	69.95	45.47
TRANSENT I	89.00	62.30
MICRO/TERMINAL	84.95	59.47
HOME EDUCATION		
MASTER TYPE	39.95	27.97
TYPING TUTOR	24.95	17.47
SNOOPER TROOPS I	44.95	31.47
SNOOPER TROOPS II	44.95	31.47
TYPE ATTACK	39.95	27.97
ALGEBRA I	39.95	27.97
WORD PROCESSOR		
BANK STREET WRITER	64.95	48.97
SCREEN WRITER II	129.95	90.97
WORDSTAR	395.00	276.50
MAGIC WINDOW II	149.00	104.30
SENSIBLE SPELLER	125.00	87.50
FORMAT II	150.00	105.00
BUSINESS		
VISICALC	250.00	175.00
PFS FILE	125.00	87.50
MULTIPLAN	275.00	192.50
PFS/REPORT	125.00	87.50
DB MASTER	229.00	160.30
PFS/GRAPH	125.00	87.50

ALL ITEMS SUBJECT TO AVAILABILITY
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

To order call toll free or send personal check, money order, or cashier check. C.O.D. orders accepted. Personal and company checks allow 10 working days to clear. Specify if to backorder or to send refund. California residents add 6% sales tax. Include phone number with order. Shipping and handling: Continental U.S. add \$2.00 for 1 to 3 items, 4 to 6 items add \$4.00. Alaska, Hawaii and Canada add \$2.00 per item. Business packages \$5.00 per item. 2nd day air add \$1.50. Foreign orders add 10% and include check drawn on U.S. bank. C.O.D. orders add \$1.65. Mail orders to:

GOLEM COMPUTERS

P.O. BOX 6698

WESTLAKE VILLAGE, CA 91359

Apple is a trademark of Apple Computers Inc.

Hints 'n' Techniques

the printer, because by following this marker with RETURN no syntax error

results. Also, when listing an Apple-soft program, REM is automatically

```

8008: 20 EA 03 38      JSR DOSHOOK
8008: 60              RTS
                        *
800C: 20 1B FD 41      PRNT      JSR KEYIN
800F: C9 90 42        CMP #90      ;CTRL-P
8011: D0 06 43        BNE Y1
8013: 20 1A 80 44      JSR PRINTER
8016: 4C 0C FD 45      JMP RDKEY
8019: 60              RTS
                        *
801A: 20 4A FF 48      PRINTER JSR $FF4A      ;SAVE REGS
801D: A5 24 49        LDA CH
801F: 48 50          PHA
8020: A9 28 51        LDA #40      ;INSERT
8022: 8D F9 05 52      STA COUNT   ;PRINTER
8025: A9 01 53        LDA #1       ;PARAMS
8027: 8D 79 07 54      STA NOVID
                        *
802A: A2 00 55        LDX #0       ;START
802C: 8A 57          TXA          ;TO
802D: 20 C1 FB 58      JSR BASCAL  ;DETERMINE
8030: A0 00 59        LDY #0       ;CONTENTS
8032: B1 28 60        LDA (BASL),Y  ;OF THE
8034: C9 A0 61        CMP #A0      ;TEXT
8036: B0 04 62        BGE Y5       ;SCREEN
                        *
8038: 69 40 64        ADC #40      ;INVS/FLSH
803A: D0 FB 65        BNE Y4       ;CHARS
                        *
803C: E8 67          INX          ;SET COPY
803D: 8A 68          TXA          ;LIMIT TO
803E: 20 C1 FB 69      JSR BASCAL  ;BLNK LINE
8041: 98 70          TYA          ;FOLLOWED
8042: 48 71          PHA          ;BY "REM*"
8043: A0 00 72        LDA #0       ;IN LFTMOST
8045: EA 73          NOP          ;MARGIN---
8046: B1 28 74        LDA (BASL),Y ;NO PROMPT
                        *
8048: C9 D2 76        CMP #D2      ;LTR. R
804A: D0 1A 77        BNE X1
804C: C8 78          INY
804D: B1 28 79        LDA (BASL),Y
804F: C9 C5 80        CMP #C5      ;LTR. E
8051: D0 13 81        BNE X1
8053: C8 82          INY
8054: B1 28 83        LDA (BASL),Y
8056: C9 CD 84        CMP #CD      ;LTR. M
8058: D0 0C 85        BNE X1
805A: C8 86          INY
805B: B1 28 87        LDA (BASL),Y
805D: C9 AA 88        CMP #AA      ;ASTERISK
805F: D0 05 89        BNE X1
8061: 68 90          PLA
8062: AB 91          TAY
8063: 4C B1 80 92      JMP Y6      ;END COPY
                        *
8066: CA 94          DEX          ;RESTORE
8067: 8A 95          TXA          ;PREVIOUS
8068: 20 C1 FB 96      JSR BASCAL  ;CONDITION
806B: 68 97          PLA
806C: AB 98          TAY
806D: B1 28 99        LDA (BASL),Y
806F: 20 02 C1 100     JSR PRINT
8072: C8 101         INY
8073: C0 28 102        CPY #40      ;40 CHARS
8075: 90 BB 103        BLT Y3       ;PER LINE
8077: A9 BD 104        LDA #8D      ;C/R
8079: 20 02 C1 105     JSR PRINT
807C: E8 106         INX
807D: E0 18 107        CPX #24      ;24 LINES
807F: 90 AB 108        BLT Y2       ;PER PAGE
                        *
8081: 68 109         INY
8082: 85 24 111        STA CH      ;SET UP
8084: 20 22 FC 112     JSR VTAB    ;THE END
8087: 20 3F FF 113     JSR $FF3F   ;RSTRE REGS
808A: 60 114         RTS

```


APPLE

Apple II E \$1149.00
 Apple Monitor III
 w/ Stand \$ 199.00
 Apple Disk II \$ 399.00
 Apple 80 Col. Card . \$ 99.00
 Apple Extended 80
 Col Card \$249.00
 Apple II E Starter
 System II E, 80 Co. Card,
 Monitor III, Monitor Stand,
 Disk II+,
 Controller \$1699.00



FRANKLIN

Starter System
 ACE 1000, 12" green screen
 monitor, RANA Elite I Disk Drive
 & Controller \$1469.00
Starter System
 w/EPSON MX80 III
 Printer Interface Card
 and Cable \$1829.00
 ACE 1200 (1 Disk) . \$1799.00
 ACE 1200 (2 Disk) . \$2199.00

ACE 1000 w/color
 \$919.00

MICROSOFT

16K Ram for Apple \$ 70.00
 64K Ram for IBM \$269.00
 256K Ram for IBM \$680.00
 64K Ramchip set for IBM \$129.00
 Systemcard 256K for IBM \$479.00
 Systemcard 64K for IBM \$299.00
 Z-80 Softcard \$245.00
 Softcard Premium System \$469.00
 Softcard Plus System for II-E \$449.00
 Multiplan for Z-80 \$189.00
 Multiplan for Appledos \$189.00

RanaSystems

Elite I \$260.00
 w/Controller \$320.00
 Elite II \$460.00
 w/Controller \$530.00
 Elite III \$595.00
 w/Controller \$670.00



EPSON

EPSON AMERICA, INC.

RX 80 Printer \$275.00
 MX 80 FT Printer .. \$430.00
 MX 100 Printer ... \$585.00
 FX 80 Printer \$535.00
 FX 100 Printer \$689.00
GRAFTRAX for
 MX Series \$ 55.00
 (Specify printer)

Novation



Applecot II \$269.00
 Includes Free Time On Source,
 Operating Software, and your choice of a
 free Handset or BSR Controller
 212 Applecot
 Upgrade \$329.00
 BSR Controller \$ 19.00
 Handset \$ 29.00
 Expansion Module \$ 39.00
 *CAT \$150.00
 *D-CAT \$170.00
 *AUTOCAT \$559.00
 *J-CAT \$120.00
 *SMART CAT 103 \$189.00
 *Require RS 232 Interface

Hayes®

Micro Modem II \$275.00
 Micro Modem II
 w/Terminal
 Program \$309.00
 Smart Modem 300 \$239.00
 Smart Modem 1200B
 for IBM \$467.00

OKIDATA

ML 80 \$300.00
 ML 82A \$379.00
 ML 83A \$595.00
 ML 84P \$919.00
 ML 84S \$989.00
 ML 92P \$449.00
 ML 92S \$549.00
 ML 93P \$825.00
 ML 93S \$899.00
 Okigraph I \$ 40.00
 (Specify 82 or 83)
 Okigraph II \$ 50.00
 (For Apple or Franklin)
 Roll Paper Stand \$ 30.00
 For 82A
 Tractor Feed \$ 50.00
 For 82A

Orange Micro Inc.

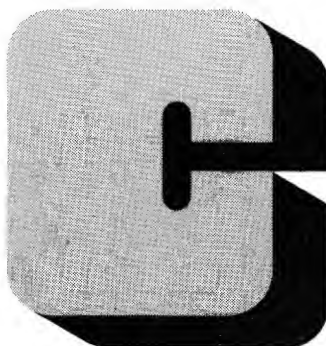
Grappler+ \$125.00
 Buffer Board \$ 79.00
 Buffered
 Grappler+ \$199.00



STX-80 (Thermal) \$179.00
 Gemini 10X \$325.00
 Gemini 15 \$419.00

TG Products

Game Paddles . \$29.00
 Joy Stick \$45.00
 Track Ball \$48.00



Prices subject to change without
 notice (up or down).

MAIL ORDER DIVISION

Carolina Microsystems

For technical support, call 1-803-254-6233. To
 order, call tollfree: 1-800-845-7077; phone lines
 open 10:00 am - 6:00 pm Eastern time. For
 Mastercard or Visa, add 3% service charge. Call
 today, or send check/money order to Carolina
 Microsystems, Mail Order Division, Suite 69,
 1332 Main Street, Columbia, S C

Add 1% for shipping and handling.

```

8 TEXT : HOME
10 REM **APPLESOFT VERSION OF ASL FGM. FOR CONTROLLING AMT. SCRN. DUMP TO
  PRINTER**
20 IF PEEK ( - 32752) = 144 THEN 40: REM DON'T DUPLICATE LAM ROUTN
30 GOSUB 100: REM LAM ROUTN
40 CALL - 32768
50 END
100 A$ = "8000:A9 0C 85 38 A9 80 85 39 20 EA 03 60 20 18 FB C9 90 D0 06 20
  1A 80 4C 0C FD 60 20 4A FF A5 24 48 A9 28 8D F9 05 A9 91 8D 79 07"
110 GOSUB 200
120 A$ = "802A:A2 00 8A 20 C1 FB A0 00 B1 28 C9 A0 B0 04 69 40 D0 FB EB 8A
  20 C1 FB 98 48 A0 00 EA B1 28 C9 D2 D0 1A CB B1 28 C9 C5 D0 13 CB B1
  28 C9 CD"
130 GOSUB 200
140 A$ = "8058:D0 0C C8 B1 28 C9 AA D0 05 68 A8 4C 81 90 CA 8A 20 C1 FB 68
  A8 B1 28 20 02 C1 CB D0 28 90 EB A9 8D 20 02 C1 EB E0 18 90 AB 68 85
  24 20 22 FC 20 3F FF 60"
150 GOSUB 200: RETURN
200 A$ = A$ + " N D9C68": FOR I = 1 TO LEN (A$): POKE 511 + I, ASC ( MID$
  (A$,I,1)) + 128: NEXT
  I
210 POKE 72,0: CALL - 144: RETURN

```

Listing 2. Applesoft Basic program.

followed by one or more spaces. Of course, when entering a message on the screen that is to be printed, a space should always follow REM in order to avoid a premature print halt.

When the Applesoft Basic program is run, the input hooks are set (for control-P) and the appropriate assembler code enters the monitor. The text screen may then be filled with characters, some of which are to be

printed (e.g., by loading and listing a Basic program). After the user decides what portion of the screen is to be printed, a blank line is entered immediately after the last line. This is followed in the next line, in the leftmost position (no prompt), by the marker REM* and a return. Then, the use of CALL-32742 should yield the desired result (CTRL-P in monitor mode may also be used).

When the assembler program is

employed to control the amount of screen display dumped to the printer, the BSAVE'd program (BSAVE program name, A\$8000,L138) is BRUN. The text screen is next filled with characters to be printed. The blank line and REM* marker are then entered as described previously. The use of control-P (in monitor mode) will activate the printer and produce the desired results. ■

References

1. R.M. Mottola, *MICRO*, 14:27 (1979)
2. B. Sander-Cederlof, *Apple Assembly Line*, 1, 5 (1981)
3. A. Christopher, *Softalk*, p. 15 (Nov. 1981)
4. J. Branch and S. Freeman, *Nibble*, 3, 147 (1982)
5. U. Schlichtmann, *Apple Assembly Line*, 3, 12 (1983)
6. V.J. Golding, *Call-A.P.P.L.E. in Depth*, #1, p. 30 (1981)

Circle 264 on Reader Service card.

BACK UP YOUR DISKS

EDD is the most powerful disk duplicator available for your Apple™ computer. Unlike the copycards, which only copy single load programs, EDD backs up your entire disk. EDD can back up more protected software than all other copy programs or copycards put together. Since EDD is automatic, you will no longer have to change parameters to duplicate most disks, although every parameter is fully documented in our extensive manual. We also provide updated EDD program lists.

\$79⁹⁵

Plus \$2 postage
(Overseas \$5)
CA residents
add 6%

Runs on: 48K Apple II,
II plus, IIe, or III (emulation mode) with 1 or 2,
3.3 drives

ESSENTIAL DATA DUPLICATOR III™

- EDD rarely needs parameter changing
- Automatically finds the beginning of each track
- Unlike any of the Copycards, EDD backs up the entire disk, not just what is in memory
- Accurately finds "auto-sync" bytes and their lengths
- Can copy ¼ and ¾ tracks

UTILICO MICROWARE

TO ORDER OR FOR MORE INFORMATION, CALL (707) 257-2420
3377 Solano Ave., Suite 352, Napa, CA 94558

Circle 436 on Reader Service card.

THE ORIGINAL SOFTMAKER II™

For the Apple II, II+, IIe*
IBM Radio Shack III, 4, CP/M

SOFTMAKER II is a sophisticated, but easy to use data base program generator. It writes in BASIC code, but you talk to it in simple English. Thousands of copies already sold and operated by HAPPY users. SOFTMAKER II can help make you a real pro. Based on your ideas, it writes complete stand-alone programs. If you wish, you may even sell the programs you generate and owe NO royalties.

ONE TIME SPECIAL OFFER

Softmaker II, Softrep, + Documentation
\$49.95 **

Hardware

•Micromodem II	\$259.95
•Micromodem w/ Terminal Prg.	\$290.00
•Apple Cat II	\$289.95
•SoftCard Premium Sys.	\$456.95
•SoftCard IIe	\$359.95

Software

•Bank Street Writer	\$46.95
•Home Accountant	\$47.95
•WordStar (req. Z-80)	\$251.95
•Multiplan (CP/M or DOS)	\$171.95
•SuperCalc II	\$185.95

Write for free catalog of additional specials.

Terms: Cash, Checks, MO, MC, and Visa - All payments U.S. currency. MC & Visa orders add 4% to order. C.O.D.'s and foreign orders add \$5.00. Postage: \$1.50 + 3% of total order. Iowa residents add 4% sales tax.

LoneStar Computerware
P.O. Box 172
West Liberty, Iowa 52776
(319) 627-2272

*req. CP/M 2.2

**Offer good till March 1, 1984

inCider's inSidious inSolubles

— by Art Ude —

Sure, I studied books about how to program in Basic, but the most useful method of learning I know is typing in all those listings that appear in computer magazines. That, and debugging my own programming errors, proves a most effective way to learn. While I was editor of a local user group newsletter, the idea struck me: Why not combine these two inexact instruction methods into one, short bug-infested program? I tested the idea in the newsletter for a few months and it received a positive response, so I suggested a similar venture to *inCider*.

Each month *inCider* will list a short Basic Applesoft program that will seem to run correctly, but there will be something wrong. Oh, you won't see anything so obvious as SYNTAX ERR or any other ERR for that matter; however, that programmer's sixth sense that you have developed, slaving over a hot keyboard, will "tell" you something is amiss. The answer will be elsewhere in this issue. Some solutions will be very easy, some a lot harder. Some will be "cute," some will be tricky.

Here are a few guidelines and suggestions:

1. The Basic programs are in straightforward Applesoft. Any poked machine language subroutines and CALLS to that subroutine are correct.
2. You should get some kind of a result from the programs; in other words, they shouldn't crash.
3. You should not get an ERR message of any kind. If you do, check your typing.
4. There will be a short explanation of what the program is supposed to do. Read this explanation *carefully*. It may contain clues to the problem.
5. The program will run on any version of an Apple II with Applesoft. The

program may make use of common peripherals such as a disk drive, printer, modem etc., but will make note of this in the explanation.

6. There may be more than one error in the program.

The folks at *inCider* encourage their readers to submit their own inSidious inSolubles. While there is no length limit, the shorter the better. All submissions should contain the correct solution and conform to all the above specifications. If your program is especially ingenious, you will receive either a free 12-month subscription to *inCider*, or a 12-month extension of your present subscription. Take a whack at it!

* * *

The Chess Board

This program (see Listing 1) draws a chess board on the Apple's lo-res screen. Now, think carefully. What's wrong with The Chess Board?

Solution on page 174.

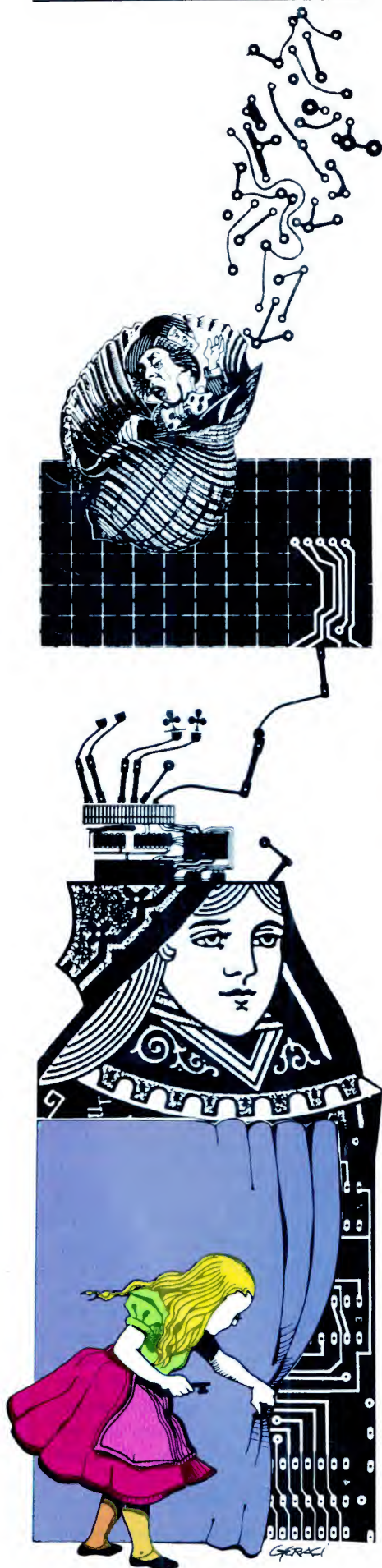
```

10 TEXT : HOME : L = 0 : GR
20 FOR X = 0 TO 35 STEP 5 : Y = L
30 COLOR = 0 : IF (X + Y) / 10 < >
   INT ((X + Y) / 10) THEN COLOR =
   15
40 FOR Y = L TO L + 4
50 HLIN X,X + 4 AT Y
60 NEXT Y : Y = 0 : NEXT X
70 L = L + 5 : IF L > 35 THEN END
80 GOTO 20

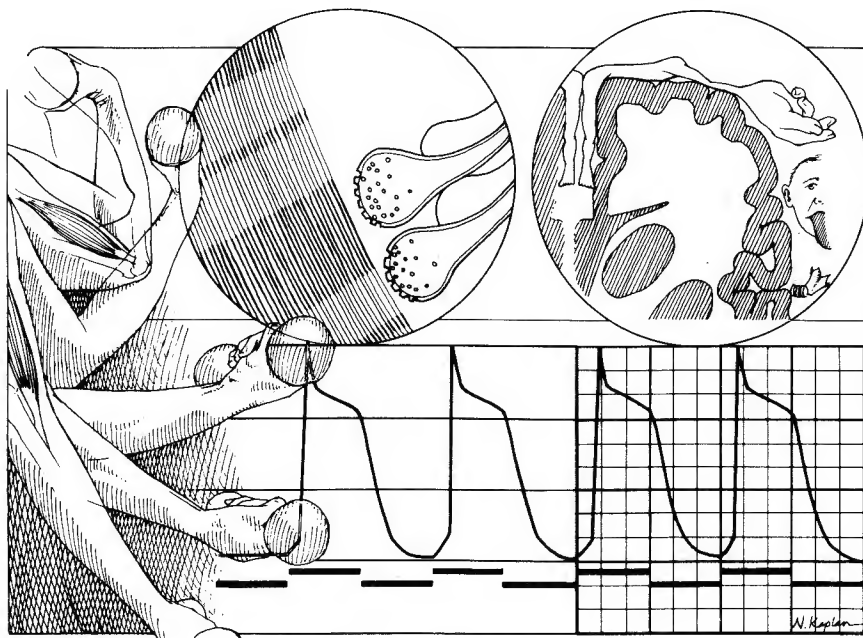
```

Listing 1. The Chess Board.

Submit your own inCider inSidious inSolubles to Art Ude, c/o inCider, 80 Pine St., Peterborough, NH 03458.



Software Reviews



Neuromuscular Concepts

Are you a biology teacher whose students need some individualized practice in understanding neuromuscular concepts? Or perhaps you're a college student who needs a quick review and self-testing before the midterm or final examination. If so, Biosource Software has produced a three-disk package which may help you.

Neuromuscular Concepts is designed to be run on a 48K Apple II, II Plus or IIe with one disk drive and monitor.

Neuromuscular Concepts consists of five tutorials, a series of ten-question multiple choice quizzes, and more comprehensive 25- or 50-question review exams. All the tests have immediate feedback and, when completed, the student can see an assessment of his/her performance in each of the five areas covered—a handy feature when studying for an exam.

The tutorial sections cover five subjects: muscle action potentials, using the electromyogram, skeletal muscle contraction, muscles in action and disorders of movement. A glossary is provided with each section, but

most high school students will also need a dictionary.

Entrance into the glossary is very easy: You simply press G. Pressing R immediately returns you to the page you were on. All the tutorials are user-controlled, allowing the student to progress (or review) at his/her desired pace. The few necessary commands are simple and well documented. Likewise, error trapping is well done.

After each concept is presented, the student is asked a multiple choice question. When the answer is entered, it is defined; and if it is an incorrect choice, the student is instructed to try again. When the student chooses the correct answer, the reason for this answer is repeated too, serving as a reinforcement.

Of special note is the visual presentation of the program. All of the sections are clear and well spaced. The graphics are well executed and easy to understand, although I would like to see more labelling of specific parts of the diagrams, especially if the units are to be used by students new to this field of study.

The disks are sold as a stand-alone unit, but this software is designed to be used within a curriculum and the

authors have also produced a separate slide set for classroom use. A set of multiple choice tests is also available for classroom use at an additional cost of \$65. The publisher states that they will provide users with updates for the cost of postage and handling, or with back-up copies for \$15.

The documentation for Neuromuscular Concepts consists of four disk-size pages of clear and sufficient descriptions and instructions and a short bibliography. The short documentation is not a drawback since this is a user friendly system which displays the instructions on each screen seen by the student (in a style which doesn't interfere with the material itself). The screen instructions enhance the unit's usefulness in schools, where loose instruction sheets are often lost. The self-explanatory materials save time and avoid frustration for both student and teacher.

Neuromuscular Concepts can be purchased for \$49.95 from Biosource Software, 2105 S. Franklin, Suite B, Kirksville, MO 63501. Biosource has ceased copy protection after discovering that several commercial encryption systems do not tolerate minor disk drive misalignments. ■

Janet E. Meizel
Davis, CA

Early Games Music

Many children begin their music education as toddlers or in nursery school and are ready to learn the rudiments of theory before they have reached the first or second grade. Consequently, when program directions are difficult to read, or instant feedback is not available, youngsters become frustrated and don't want to play with the music-teaching games their parents have bought. Early Games Music completely avoids these pitfalls, presenting several teaching games that are accessible to even the youngest child.

Early Games Music requires an

NEW

FROM

Wayne Green Books

CONTROL YOUR COSTS AND MAXIMIZE YOUR PROFIT

To make a profit, you have to know what your costs are. *Low Cost Costing* is a book-and-software combination that will help you determine production costs for your small business, using your Apple, IBM PC, or TRS-80.

Whether you're a company president, controller, production manager, or anyone responsible for production, you can increase your profits once you know what you're spending. *Low Cost Costing* shows you how to analyze your costs using your profit-and-loss statements and your microcomputer. Once you've found them, you can:

Cut your costs.

Adjust prices for maximum profit.

Set marketing and manufacturing strategies.

Predict the results of changes in volume and fixed or variable costs.

Determine why some products sell and others don't.

The *Low Cost Costing* book and disk are packaged in a

LOW COST COSTING

PRODUCT COSTING
WITH YOUR
MICROCOMPUTER

THOMAS S. FISKE

WAYNE GREEN BOOKS

plastic binder that stores and protects them. It's the time-and money-saving combination your small business needs—*Low Cost Costing* and your micro.

Low Cost Costing

Thomas S. Fiske
approx. 112 pp.
\$24.97

Apple II, II Plus, IIC
BK7399
ISBN 0-88006-067-0

IBM PC
BK7402
ISBN 0-88006-071-9

TRS-80 Model I, III
BK7403
ISBN 0-88006-072-7

To order, call toll-free 1-800-258-5473 for credit card orders. Or mail your order with check or money order or complete credit card information to: Wayne Green Books, Retail Sales, Peterborough, NH 03458. Please include shipping and handling of \$1.50 for the first system, \$1.00 for each additional system.

Yes, I want *Low Cost Costing*. \$24.97 per system, plus shipping and handling (\$1.50 for the first system, \$1.00 for each additional system). Please indicate total number wanted for each system.

_____ Apple (BK7399) _____ IBM PC (BK7402) _____ TRS-80 (BK7403)

☐ payment enclosed ☐ MasterCard ☐ Visa ☐ Am. Ex.

Card # _____ MC bank # _____

Expiration date _____ Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Wayne Green Books, Peterborough, NH 03458

342B5L



Apple II Plus or an Apple IIe. The instructions cover the use of an external speaker, but I found this wasn't necessary; the sound was clear without resorting to one. Only one disk is provided, but it can be copied using Apple's CopyA program.

Author John Paulson knows his audience. Under the heading of Getting Started there is a note that states by pressing Control-I the student can access instructions for each game and/or the menu and avoid reading the rest of the booklet. (I would recommend that parents read it so that they will be able to help a child using the disk.)

Choices are easily made even by non-readers; one of the two menus is a picture menu. When the series of pictures appears, the user can press any key to stop the menu at the desired game, which begins automatically. (You can also press the escape key at any time to exit from any game and return to the picture menu.) This approach gives a small child a sense of his/her ability to control the computer.

The top row of keys can be used to play musical notes, with each num-

ber-key assigned one tone of a diatonic scale. As the note is played it is shown on the screen either as the corresponding piano key or as a note on the treble or bass staff, according to the player's choice. The author, taking advantage of the fact that most small children are familiar with initial consonant sounds, uses P for the PLAYBACK command, S for SAVE, and L for LOAD, making the commands easy to remember. The space bar begins and ends recording and RETURN selects keyboard or clef presentations.

With an Apple IIe or an Apple II Plus which has been modified to have key-repeat abilities, the player will encounter a problem with note entry. If a key is held down for more than one beat, it will repeat until interrupted. This means that only relatively simple tunes can be played. Since the games are intended for use by young children, this is not really a major problem. When I spoke to a representative of Counterpoint Software, he acknowledged the situation but said that they had no plans for modification of the program at that time.

Guido's Quiz is a series of three programs designed to teach note names, piano key names and basic note reading. The first game pictures a partial piano keyboard. Each of the notes of a C major scale is labelled and sounded. Then one of the labels is replaced with a question mark and the player is asked to type in its name. After one guess, the name reappears and the note sounds again.

The second game shows the treble clef notes. A staff appears and then each of the notes from middle C to high G appear and are played. This game has three phases. First it shows all the note names but one, which is replaced by a question mark. When a note is guessed, it is eliminated from the picture. Finally, the question mark appears on an otherwise empty staff, and you must enter the note name.

In order to continue playing the game after you have made your guess, you must enter the correct note name. If you have entered the wrong name, the computer plays a scale while showing each of the notes and its placement. You are then asked again to enter the right note name. When you answer, the individual note remains while the others disappear from the screen. You have then entered the right answer. This same pattern is followed using the bass clef in the third game.

Melody Tutor is a "do what I do" game in which the student tries to play the same tune as the computer. Six nursery tunes are provided and are listed in the instructions. Other songs can be added to this list using the record/save/playback section of the disk. First the entire tune is played and each note appears on the keyboard graphics with the number of the corresponding computer key. Then, one note at a time is added which the student must echo by using the top row of keys on the computer. Some of the songs are quite long, and I found that entering short melodies into the list helped keep the attention of the younger players.

MAIL MANAGER™

A NEW PROFESSIONAL STANDARD

The ONE Mailing List/File Management Program that creates Mail Merge files for all versions of

APPLEWRITER II EXECUTIVE SECRETARY SCREENWRITER II MAGIC WINDOW II

and for its own, Built-In, Word Processor.

- ✓ 9999 record capacity ✓ defaults on entry
- ✓ specify field names & lengths or use default
- ✓ instant search over any combination of fields
- ✓ sort by name, zip code or any other field
- ✓ print labels in 1 to 4 columns, also envelopes, lists, invoices (does math) and forms
- ✓ user-defined print formats stored on disk
- ✓ text insertion anywhere in output (e.g., Att: Occupant, Sales Director, Please Forward)
- ✓ duplication identification ✓ mass change & delete
- ✓ restructure file at any time without retyping data
- ✓ create subfiles and DIF files ✓ merge files
- ✓ screen prompts for commands ✓ easy to learn
- ✓ extensively field tested ✓ detailed manual
- ✓ Free guide to Data Base Management
- ✓ 24 hour user support number

Apple II+ or IIe, Franklin, etc., 48K, min. 1 disk drive

Still Only \$89.95

Credit Card Orders • 24-Hour • Toll-Free

800-227-1617 ext. 258

800-772-3545 ext. 258 in CA

or send a check today to:



Craftsbury Software

1623 Montague St., N.W. Dept. I
Washington, D.C. 20011

Write for catalog or call (202)829-3121

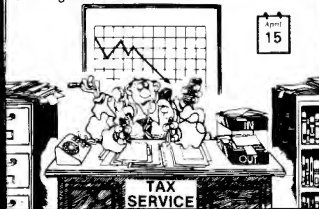
MEMORY JOGGER, a unique appointment calendar and time management system that is the perfect complement to MAIL MANAGER. Features a calendar calibrated for the next 100 years, one-time entry of recurring events, project scheduler, and auto day-of-the-week function. \$39.95. Both programs for \$99.

FINALLY, THE TAX PACKAGE YOU'D BEEN LOOKING FOR...

1983 TAX PACKAGES

Specifically designed for Tax Services, C.P.A.'s and Individuals

Getting nowhere fast?



ARE YOU TIRED OF...

- Working late into the night doing tax returns?
- Making simple addition errors?
- Not being able to utilize your computer?
- Having to pay hundreds of dollars for tax software?

NOT ANYMORE... THOSE DAYS ARE GONE!!

WITH OUR TAX PACKAGES YOU CAN...

- Double, triple or quadruple your output
- Eliminate those embarrassing addition errors
- Have professional looking returns
- Let your computer do most of the work
- Have quality software at a fraction of the price

Our PROFESSIONAL INCOME TAX PACKAGES are very easy to use. All Programs are menu driven and each follows the tax forms and schedules line by line. You can review all your figures on the screen and be able to change any of your entries before printing. Produces a printout that exactly fits FORM 1040 (or use with our Plastic overlays) and all other FORMS and SCHEDULES printed in IRS Approved format. You can also save client data to disk for later recall.

Our tax programs are designed to run on TRS-80 Models I, III, IV, APPLE II+, IIe and FRANKLIN ACE computers. All versions require a minimum of 48K memory and one disk drive.

TAX PACKAGE I		TAX PACKAGE II		TAX PACKAGE III		TAX PACKAGE IV	
Form 1040	SCH E	Form 1040A	Form 3468	Form 4797	Form 5884	Form 1120	SCH D 1120S
Form 2106	SCH F	Form 1040EZ	Form 3903	Form 4835	INC STATEMENT	1120 WKSH	Form 1041
SCH A	SCH G	Form 1116	Form 4255	PG 1 4972	RENTAL STATEMENT	SCH D 1120	K1 1041
SCH B	SCH R&RP	Form 2119	Form 4562	Form 5695	IRA	Form 1120S	SCH D 1041
SCH C	SCH SE	Form 2210	Form 4137	Form 6251	ACRS	K1 1120S	Form 1065
SCH D	SCH W	Form 2440	Form 4684	Form 6252	Add & print W2's	Form 1065	K1 1065
		Form 2441		Form 1040X	AND MORE		



We ship within one day of receiving orders.

When ordering by mail, include your telephone number, credit card information, computer model, memory size, and number of drives. Indiana residents add 5% sales tax.

Please add \$3.00 shipping and handling. C.O.D. charge is \$5.00.

EACH TAX PACKAGE... ONLY \$49⁹⁵

FREE WITH EACH ORDER... PLASTIC OVERLAYS FOR PAGE 1 AND 2 OF FORM 1040!!

FOR ORDERS OR INFORMATION CALL OR WRITE:

R&S SOFTWARE

R&S Software Co.
Box 81 • Hammond, IN 46320
(312) 891-3502

WE ACCEPT
• Visa
• MasterCard
• Checks
• Money Order
• C.O.D.

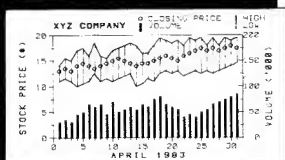
So Don't Delay... Order Your TAX PACKAGE Today!

DEALER INQUIRIES INVITED

THE PRIME PLOTTER™

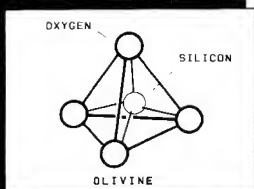
The Graphics/Statistics Package FOR THE APPLE II+ / IIe

Praise Our Own Product? The Reviewers Have Done It For Us!*



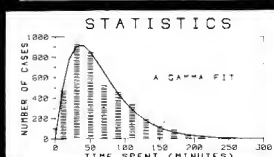
"The Prime Plotter is the kind of graphics package you'd expect to find on a mainframe computer." "Once mastered, there is no plotting package that is quite this versatile and powerful."

Gregory MacNicol
InfoWorld September 5, 1983



"The Prime Plotter contains more power than any graphing package I have used." "It can do many things not found in other packages; I know of no competing program which can do as much!"

David Morganstein
Washington Apple Pi May 1983



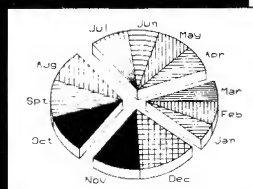
"The Prime Plotter is a surprisingly complete plotting package designed for a variety of applications. Routines to create X-Y plots, 3-D charts, bar graphs, and figure charts make the product the most powerful plotting package the reviewer has seen." "The product is superb for creating 'slide-show' presentations of generic data."

Chris Williams
MICRO August 1983

The Prime Plotter
Demo disk, refundable
Manual, 2nd edition, enhanced,
for 1st edition users only

\$240 Plotter Interfaces:
\$15 SWEET-P 100
\$60 STROBE 100/200
\$15 COMREX CR-1810
\$60 HP 7475A/7470A/7220C
\$75

Apple is the trademark of Apple Computer, Inc. HP 7470A/7220C are products of Hewlett-Packard. Sweet-P is a product of Enter Computer, Inc. STROBE 100/200 are products of Strobe, Inc. Apple II Business Graphics is trademark of Business & Professional Graphics, distributed by Apple Computer. PFS Graph is trademark of Software Publishing Corp. Versaplot is trademark of SpectraSoft.



"Prime Plotter is a carefully conceived, well-executed package for business or scientific applications that can benefit from its great power." "Flexibility is the hallmark of this package."

AEDC
SOFTALK September 1983



"At first glance, it's almost overwhelming." "While simplicity is a key, the myriad of possibilities featured can test the ingenuity of even the most knowledgeable user."

Business Software
Vol. 1, No. 5, Sept./Oct. 1983

PEELINGS II Rating

The Prime Plotter A +
Apple II Business Graphics A -
PFS Graph B
Versaplot D

"In conclusion, if you are looking for the most powerful program for scientific or business use and are willing to spend several days learning the system, The Prime Plotter is your best choice."

Plotter Summary
PEELINGS II Vol. 4, No. 4, 1983

To order, or for more information, see your dealer or contact:

(*) By permission of the respective magazines.

PRIMESoft CORP.

P.O. Box 40, Cabin John, MD 20818 Phone: (301) 229-4229

Personal checks, Visa, MasterCard, or Choice accepted. Dealers: call/write for a dealer kit.

If the wrong note is pressed, the computer plays a low flutter of notes and repeats the pattern to be played. Then the child can try again until he plays the entire song. It's good ear and memory training, and the small steps make it easy for any child to play a song.

In Kaleidoscore, each key is assigned both a tone and a low-resolution shape that appears in random colors, sizes and placement on the screen. As you play a tune, a pattern appears on the screen. Tunes can be recorded, saved and played back or loaded from memory. The same commands used in other programs are also used here; this consistency is one of the strong points of the Early Games programs.

This is undoubtedly the best set of music-teaching games I have seen yet. They would be a valuable purchase for any family with a music student from 4 through 10 years of age.

Early Games Music is published by Counterpoint Software, Inc., Suite 218, 4005 West 65th St., Minneapolis, MN 55426. The recommended retail price is \$29.99. ■

Janet Meizel
Davis, CA

SAT Series

Krell's College Board materials have some glaring flaws, but they scored well overall with the high school students who reviewed them with me. "If I had this stuff to help me study," said a boy who had recently tallied 400s, "I'd have scored 50 points higher." Actually, Krell guarantees a gain of 70 points (combined math and verbal scores) over the user's previous marks or the purchase price will be refunded.

The materials include six disks covering Verbal, Vocabulary, Test of Standard Written English 1 & 2 and Math 1 & 2. I worked with former students with previous SAT scores in the 400's, 500's, 600's and 700's to review the series. All agreed that the program directions are clear and that

the exercises are similar to the actual SAT format. Most complained, however, that some explanations for answers are unclear.

For example, one explanation read: "A semicolon is used between independent clauses joined by a coordinating conjunction if the clauses have internal commas." Another read: "The elliptical construction as often here requires the inclusion of the missing component 'as.'" Still, there

**"Krell guarantees
a gain of 70
points over the user's
previous marks."**

are enough good drills on diction, punctuation, subject/verb agreement, vocabulary and math skills to make the program worthwhile. "It's a lot more entertaining than studying those dull SAT review books," said one boy. "And at least you're interacting with something—even if it is only a machine."

One bright student with a penchant for math and computers pointed out that the math problems are well designed. "I especially like the feature that allows you to call up a new question similar to the one you just got wrong—that really helps." But the manufacturer missed a great opportunity, according to the same student, by failing to utilize graphics in the solutions. His other suggestion was echoed by the other students: "When I'm done working with the program," he said, "I'd prefer the computer to grade me on a 200 to 800 scale instead of telling me I scored 80 out of a possible 94 points."

The students and I found misspellings and grammatical errors in several programs. Meteorologist becomes meterologist, coefficient is sometimes spelled with one f, and the ancient fossil Trilobite becomes Tribolite.

A senior who recently scored in the 700's probably summed things up best. "The program definitely has

value," he maintained, "but because of some of those complicated explanations, it may well be most helpful to those students who need it least and least helpful to those who need it most."

One strong plus is the program's Automatic Learning feature. The math and vocabulary disks are designed to monitor the user's progress. The program then gives the user fewer questions of the type he has mastered and more of the type he hasn't. Krell also has some useful options (at extra cost) scheduled for 1984, including a worksheet generator and a classroom management system for school recordkeeping.

Krell's College Board SAT Preparation Series is distributed by Krell Software, 1320 Stony Brook Road, Stony Brook, NY 11790. The cost is \$299. ■

Mario Pagnoni
Methuen, MA

Financial Planning For VisiCalc

The powers of VisiCalc are a godsend to many in the financial community. Projects that once required tedious, repetitive, spreadsheet calculations are now easy and immeasurably faster. But for all of its benefits, the complexity of VisiCalc can be intimidating. The average financial and business person has little concept of the operating syntax of VisiCalc; he/she may be prone to dismiss it altogether as too difficult to learn.

With this in mind, several firms distribute ready-to-run application packages for use with VisiCalc. One such product is Financial Planning for VisiCalc and the Apple II. The package includes many of the most common financial planning routines in a VisiCalc-compatible format, offering the benefits of an electronic spreadsheet without the bother of setting up the sheet.

The result is twofold; since no set-up is needed, even first-time users can



Computer Outlet

We offer the largest selection of software and hardware
for Apple, Atari, Commodore, IBM and Kaypro at

25 to 40% off retail

1095 East Twain, Las Vegas, NV 89109 • Mon.-Fri. 8AM to 6PM, Sat. 9AM to 5PM

Apple Business

Artsci

Magic Window II \$ 95
Magic Pak (Window-Mailer-Words) \$149

Ashton Tate

DBase II (reg. Z-80) \$399
Friday \$189

Broderbund

General ledger w/payables \$329
Accounts Receivable \$249
The Bank Street Writer \$ 48

Continental

The Home Accountant \$ 48
F.C.M. \$ 62
G/L, A/R, A/P, Payroll Ea. \$159
Property Management \$305

Datasoft

Micropainter \$ 23
Lisp Interpreter \$ 79
The Basic Compiler \$ 65

Einstein Corporation

Einstein Compiler \$ 85
Einstein Memory Trainer \$ 59

Fox & Geller

Quickcode (reg. Z-80) \$189
dutil (reg. Z-80) \$ 65
dgraph (reg. Z-80) \$189

Howard Software

Creative Financing \$129
Real Estate Analyzer II \$119
Tax Preparer 1983 \$145

Hayes Microcomputer

Hayes Terminal Program \$ 65

Sorcim

Supercalc (Reg. Z-80) \$119
Supercalc II \$199
Spellguard (Reg. Z-80) \$125

Southeastern Software

Data Capture 4.0 \$ 47
Data Capture 4.0/80 \$ 59

IUS

Professional Easywriter \$115
Original Easywriter \$ 65
Original Easywriter \$ 45
Pro-Easywriter/Mailer combo \$189
Original Easywriter/Mailer combo \$ 89

Link Systems

Datafax \$119
Datalink \$ 62

Micro Lab

The Tax Manager \$ 95
Data Factory 5.0 \$189
Payroll Manager \$189

Micro Pro (All Reg. Z-80)

Wordstar \$229
Infostar \$229
Reportstar \$205
4Pak Word-Mail-Spell-Star \$419

Microsoft

Applesoft Compiler \$119
A.L.D.S. (Reg. Z-80) \$ 79
Multiplan (Apple DOS or Z-80) \$175

Sierra On-Line

Homeword \$ 34
Screenwriter II \$ 82
The Dictionary \$ 65
Screenwriter Professional \$129
The General Manager II \$149

PBL Corporation

Personal Investor \$ 95

Sensible Software

Sensible Speller \$ 82
Multi Disk Catalogue II \$ 17

Silicon Valley

Word Handler II \$ 45
List Handler \$ 39
"The Handlers" \$ 75

Software Publishing

PFS: File \$ 85
PFS: Report \$ 85
PFS: Graph \$ 85

Apple Educational

Fractions/Eduware \$ 34
Decimals/Eduware \$34
Master Type/Lighting \$27
Type Attack/Sirius \$ 27
S.A.T. Word Attack/
Harcourt Brace \$ 34
Word Attack/Davidson \$ 34
Math Blaster/Davidson \$ 34
Speed Reader II/Davidson \$ 48
Spellcopter/Designware \$ 27
Micro Multiplication/Hayden \$ 20
SongWriter/Scarborough \$ 27
PictureWriter/Scarborough \$ 27

Visicorp

Visicalc 3.3 \$165
Visiplot \$139
Visitrend/Plot \$199
Visidex \$165

Graphics & Utilities

Beagle Brothers

Apple Mechanic \$ 20
Beagle Bag \$ 20
Flex Text \$ 20
Frame Up \$ 20
Typefaces (req's Apple Mechanic) \$ 15

Penguin Software

Complete Graphics System \$ 49
Special Effects \$ 27
Graphics Magician \$ 39
Additional Fonts & Char. Sets \$ 15
Complete Graphics System II \$ 79

Apple Hit List

Creature Creator \$ 27
Sargon III \$ 35
The Cosmic Balance \$ 27
Witness \$ 34
Planetfall \$ 34
Starcross \$ 27
Zork I, II, III Ea. \$ 27
Enchanter \$ 34
Deadline \$ 34
Suspended \$ 34
AE \$ 20
The Quest \$ 15
Zero Gravity Pinball \$ 20
Sammy Lightfoot \$ 27
Apple Cider Spider \$ 24
David's Midnight Magic \$ 23
Sargon II \$ 23
Hi-Res Football \$ 27
Starblazer \$ 22
Critical Mass \$ 27
Knight of Diamonds \$ 23
Wizardry \$ 34
Legacy of Lyligamyn \$ 27
Zaxxon \$ 27
Lode Runner \$ 23
Serpentine \$ 23
Choplifter \$ 23
Frogger \$ 23
Temple of Apsai \$ 27
Castle of Wolfenstein \$ 27
Wiz & Princess \$ 22
Ulysses & The Golden Fleece \$ 23
Tigers In The Snow \$ 27
Bandits \$ 23
Aztec \$ 27
Mask of the Sun \$ 27
Ultima II \$ 39
Dark Crystal \$ 27
Spare Change \$ 27

Modems / Monitors

Hayes Micromodem II \$259
Hayes Micromodem II w/Terminal Pk \$299
Hayes Smartmodem 300 \$209
Hayes Smartmodem 1200 \$499
Novation Apple Cat II \$329
Nec JB 1201M \$169
USI Amber \$149
Leading Edge Gorilla Green \$ 85
Leading Edge Gorilla Amber \$ 89

Printers

Nec 8023 \$ 439
Nec 3530 \$1599
Nec 3550 \$1899
Diablo 620R (25cps) \$ 989
Diablo 630R (40cps) \$1729
Epson FX100 FT \$ 789
Okidata ML 82A \$ 399
Okidata ML 84P \$1049
Okidata ML 92P \$ 469
IDS Microprism 80 \$ 549
IDS Prism 132 \$1429
Citoh 8510 Prowriter \$ 365
Citoh F10 Starwriter \$1349
Mannesmann Tally 160L \$ 629
Gemini 10X \$ 315
Qume Sprint II + \$1429

Specials of the Month

Franklin Ace 1000 \$849.00
Elephant Disks s/s \$ 18.50
Verbatim Disks s/d \$ 24.00
Maxwell Disks s/d \$ 30.00
Koala Touch Tablet (Apple) \$ 85.00
Microbuffer II 32k Parallel (Internal, External) \$129.00
System Saver Fan \$ 65.00
The Grappler+ \$129.00
Flip & File Diskette Box w/lock (holds 25) \$ 18.50
Flip & File Diskette Box (holds 50) \$ 21.00

To Order Call Toll Free

Information 1-702-796-0296

Inquiries 1-702-369-5523

1-800-634-6766

We accept VISA and MasterCard

ORDERING INFORMATION AND TERMS: For Fast Delivery send cashier checks, money orders or direct bank wire transfers. Personal and company checks allow 3 weeks to clear. Charges for C.O.D. orders are \$3.00 minimum or 1% for orders over \$300. School purchase orders welcomed. Prices reflect a cash discount only and are subject to change without notice. Please enclose your phone number with any orders. **SHIPPING:** — Software: \$3.00 minimum. **SHIPPING** — Hardware: (Please call) **SHIPPING** — Foreign Orders: APO & FPO orders: \$10 minimum and 15% of all orders over \$100. Nevada residents add 5 3/4% sales tax. All goods are new and include factory warranty. Due to our low prices, all sales are final. All returns must be accompanied by a return authorization number. Call 702-369-5523 to obtain one before returning goods for replacement.

operate the system. Secondly, and perhaps more important, the spreadsheets are fully tested and debugged, eliminating the potential for errors. If you have ever set up a large spreadsheet, you know the grief that is caused by little errors such as misplaced parentheses in formulas. The larger the spreadsheet, the more potential for trouble.

There is no magic behind this financial planning package, nor are any of its formulas indecipherable to someone familiar with VisiCalc. There are, however, several formulas that would take quite a bit of figuring to come up with in the first place. Some of the formulas used are so involved that they do not fit completely on the edit line when examined or modified.

Calculations included in the package are compound growth, annuities, statistics and a section on real estate financing. Even if these programs do not give the exact information you need, the templates are easy to modify. Starting from their basic structure, you can change things until the format suits you.

The program requires 64K of memory, at least one disk drive, and, of course, a copy of VisiCalc. It runs on the II, II Plus and the IIfx. Although an 80-column board and a pre-boot routine are not necessary, they are strongly recommended. Without them, it is very difficult to keep track of what you are entering; the titles and the data entered often do not fit on the screen at the same time. The printed output is not affected, but it can make for some clumsy operation.

After loading one of the routines, the cursor appears at the first location for data entry, and VisiCalc is set for manual recalculation. The first time a calculation is performed, the reason it has been set for manual recalculation becomes apparent: some simple looking spreadsheets take upwards of a minute to figure through. This is not a long time in the overall scheme of things, but it is rather long to stare at an unchanging screen.

The package of 18 financial calculators and a well written manual is

\$79.95, which seems to be quite reasonable. Unless you have a very good programmer on your staff who works cheap, it is unlikely that you could develop these routines on your own with any kind of cost effectiveness.

Financial Planning for VisiCalc and the Apple II is manufactured by Howard W. Sams and Company, 4300 W. 62nd St., Indianapolis, IN 46268. ■

Chuck Doherty
So. Dartmouth, MA

Crypto Cube

Did anybody ever like spelling? Write each word 20 times. Write each misspelled word 100 times. Check the dictionary if you're not sure. Check the dictionary, anyway! No wonder kids hate spelling! Crypto Cube is a game that requires some idea of how to spell your words but doesn't scold you for ignorance.

The Wuzzle, a cute kind of head with feet, tells you how to play the game. First, it demonstrates a sample cube, of which you see the front face. Hidden behind the squares on four sides of the cube are several words in crossword-style. Using the arrows on a IIfx (or the control I-J-K-M on a II Plus) you choose a square to look at. If the square conceals a vowel, the letter is revealed, you get five points and your turn continues. If a consonant is hidden behind the square the Wuzzle marches out and tells you to guess a letter. A correct guess gets you ten points and another turn. A wrong answer costs you five points and your turn, if you are playing against a friend. If there is no letter in the square, your turn is over.

Every now and then the Wuzzle will give you a bonus: an extra square on the side you're working on and one square on the next side. This means that when you decide to move on to the next side you may very well find a couple of letters already revealed.

The word list itself is available to you at any time *except* when you have a letter to guess! Thus, with a

letter or two already in place, you can easily check which words they might go to and how to spell any words you might not remember.

Fifty different lists on various topics are provided on the master disk, each list having 20 words. In addition, you can make up your own word lists and save them on another disk. The same words may be used for more than one game, with the computer being asked to make a new puzzle so that the words will be arranged differently.

I played a game with Adrian, my 11-year-old, and made the mistake of being easy with him at first. As soon as he caught on to the game, he raced way ahead! Later that day I found him playing it with a friend who was likewise fascinated.

I later made up a puzzle with Darrel, age 6. He chose the option of a silent game and reversing the colors (white on black instead of black on white). The game definitely moved faster without the sound and we kept his puzzle to shorter words. Darrel tended to jump to conclusions too quickly in guessing the word he was uncovering. We completed two sides, but by that point he had lost interest. If he were a bit older—the suggested age range is eight to adult—I feel the game would have held his interest longer.

The Wuzzle is cute, but he does slow things down. His every move is accompanied by sound (hence the faster game without sound) and when a side is completed he treats you to a little song and dance, after which all the empty squares are filled in. Again, this is a time waster because you can't turn the cube until it is finished.

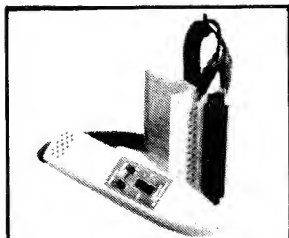
The lengthy dance and fill-in procedure naturally leads to speculation as to what happens when the game is over. The answer is, almost nothing. When the dance is over for the last completed side a square appears in the middle of the screen saying "Game Over," and you are back to choosing options for another game... quite a let-down! From an educational standpoint, nothing else is needed since the goal of the game is

APPLE "TROUBLESHOOTING"- SAVE TIME and REDUCE ERRORS!

An extender board with a unique twist - An auxiliary board where the APPLE expansion port functions are clearly described and eyelets are provided to eliminate probe slippage and the attendant shorting of adjacent connections. With the Logic Probe shown, an audible signal describing the rhythm of dynamic data on the bus adds a new dimension to your diagnostic bag of tricks. No repair facility or serious APPLE user should be without this dynamic duo.

**COMBINATION
\$139.95**

**BOARD ONLY
\$99.95**

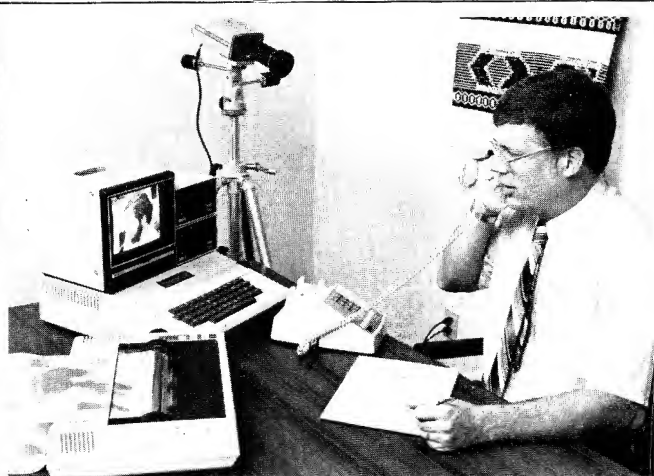


VISA/MASTERCARD and COD orders accepted. Shipping and COD charges are extra and Virginia residents add 4% tax. Your account is not charged until the day we ship.

**CALL TOLL FREE....1-800-368-6502
IN VIRGINIA CALL (804) 595-0866**

**HOLMES ENTERPRISES, INC.
12361-C WARWICK BLVD.
NEWPORT NEWS, VA. 23606**

Apple is a trademark of Apple Computer, Inc.



PhotoCaster...a new feature packed system to take, process, store, print, send and receive color and black-and-white photos with your Apple II computer.

PC-100 (disk software, I/O board, manual, demo tape) **\$499.95**

PC-101 (above plus Panasonic TV camera, RGB filter accessory) **\$749.95**

Write or call for details

Visa and Mastercard orders accepted. Shipping charges and applicable California sales tax will be added.

Apple II TM Apple Computer, Inc.
PhotoCaster TM COMMSOFT, Inc.

COMMSOFT

2452 Embarcadero Way
Palo Alto, CA 94303

(415) 493-2184

Call for the best prices in the country!

APPLE® FRANKLIN® COMPATIBLE

SLIM LINE DRIVES

Fully Tested
Superior Circuit Design



One Disk **\$229.95** w/cables

Two Disks w/single case
and Cables **\$445.95**



Control Card **\$44.00**
when ordered w/disk drive

90 day warranty

COOLING FAN

for the

APPLE

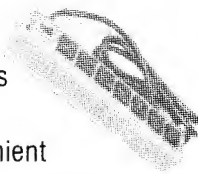
\$38.00

(Regular \$89.95)

Surge Protection Two Outlets

POW-R-PLUS W/ Surge Protection

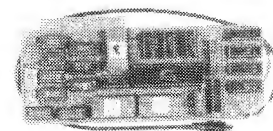
- 6' power cord
- Fully grounded
- 125vac, 15 amps
- Line filter
- Compact, convenient
- Built with circuit breaker
- Very heavy duty construction



**3 outlets \$28.95 • 6 for \$34.95
8 for \$36.95**

80 COLUMN CARD

with soft switch



Compatible with all popular word
processing programs

1 year replacement warranty
(Regular \$300.00) **\$129.00**

RIVCOM

208 GEORGIA, BOWLING GREEN, OHIO 43402

(419) 354-2219

To order, send money order or cashier's check. Personal checks and company checks take 3 weeks to clear. Add 3% for shipping.

spelling/vocabulary drill. Then too, any emphasis on winning includes the corollary that the other player is a loser. Still, I would rather see a happy Wuzzle proclaiming "You did it!" than a dull "Game Over" notice!

All in all, Crypto Cube is a game that deserves a place in the classroom, while for the home it will appeal to the word-puzzler. The game costs \$39.95 and is available from Designware, 185 Berry St., Building 3, Suite 158, San Francisco, CA 94107. ■

Tobi Hoffman
Ashland, MA

Arcademic Skill Builders in Language Arts

Arcademic Skill Builders in Language Arts is an entertaining educational package for primary students.

It includes six arcade game learning disks (thus, "Arcademic") and supplementary teaching materials. The program helps students become proficient in spelling, identifying parts of speech, subject-verb agreement, identifying antonyms, homonyms and synonyms, consonant and vowel patterns and sight word vocabulary.

Word Invasion is a variation of Space Invaders where you shoot down words instead of aliens. Your weapon is an octopus with a magic ring that can be shifted from arm to arm. Beneath the octopus is one of the six major parts of speech—noun, pronoun, verb, adjective, adverb and preposition. From the top of the screen the invading words descend. You must maneuver the magic ring (left and right arrow keys) to position it so that you fire (space bar) on the word that is the appropriate part of speech.

Verb Viper is a fast paced subject-verb agreement game. The viper is a friendly creature that feeds on verbs. But he's finicky and only consumes verbs that agree with the subject appearing on the screen below him. As

a stream of verbs approaches his mouth, you must decide if each verb form is correct. If it is, tap the space bar and it becomes a tasty morsel for the creature. But try to feed him too many incorrect verbs or miss feeding him the correct verbs and the game ends.

Word Master teaches children to identify words that are synonyms, antonyms and homonyms. In the center of the screen there is a word; there are eight words around the screen to choose from. You locate the match with your sighting scope and fire on it to score a hit. You must score eight hits before rays emanating from the words strike your word scope. The kind of match to be made (synonym, antonym, homonym) is listed at the bottom of the screen.

Wordman displays a consonant that moves around a railroad track maze. When it passes a group of letters, you must decide if those letters, if placed after the consonant, form a word. If they make a word, press the space bar; if not, do nothing. The moving letter changes often and, as with all the games in this series, hits and misses are recorded.

Spelling Wiz features a wizard who uses a magic wand to zap missing letters into a word. You must decide which of the four choices of missing letters is appropriate, point the wand at that choice and fire. The trick is to do all this before magic bubbles from a boiling cauldron knock the wand from the wizard's hand.

Word Radar gives you practice with sight word vocabulary. You are a control tower operator scanning words. The sight words are disclosed briefly and then covered by white rectangles. A radar beam sweeps across the screen and you must match each sight word that appears at the bottom of the screen before the beam completes its arc.

My children (ages 10 and 7) preferred Word Invasion, Verb Viper and Word Master. By typing Control-P you can to enter an Edit mode to change the speed and difficulty of the games to suit the needs of both children. It is also possible to

eliminate the sound effects for, say, a quiet classroom setting.

I found it disconcerting to try to select the missing letters of Spelling Wiz from four choices. As time ran out, the different letter combinations became more confusing. I'd have preferred to just type in the correct letters. I enjoyed Wordman and Word Radar but was not totally convinced of their educational value.

The supplementary materials include six user's manuals and an array of worksheets for practice and for charting pupil progress.

This program is a simple-to-use and enjoyable educational tool. It is available from Developmental Learning Materials, One DLM Park, Allen, TX 75002. The price is \$44. ■

Mario Pagnoni
Methuen, MA

Microscopic Journey

Who can ever forget the movie "Fantastic Voyage"? Miniaturized scientists guided their miniaturized ship through the body of an unconscious VIP in order to find and destroy a lethal blood clot in the victim's brain. Well, if you liked the movie, you'll like Microscopic Journey—a new game from Hayden Software.

To play Microscopic Journey you will need an Apple II or Apple II Plus, one disk drive, a color monitor and a game paddle. I used an Apple joystick, with the stick controlling up and down movement and the button controlling speed and the laser; this double function of the button (motion of the boat and laser firing) makes the game very difficult for younger children.

I tried using a green screen monitor, but the patterns produced instead of colors made the game difficult to follow and hard on the eyes.

The game is divided into five sections. For the first section the player manipulates a boat through a series of blood vessels. You try not to hit the vessel wall and to avoid floating white blood cells that can dissolve

OPEN UP AN ACCOUNTING DEPARTMENT FOR \$395.00

GENERAL LEDGER integrated postings from A/R, A/P and Payroll. Prints 13 detailed reports • Company or departmental Income Statements • **Comparative financial statements** with current, YTD, budget, and last year (month and YTD) • Presents everything you, your bookkeeper, and your accountant need to know • G/L reconciles all accounts and maintains extensive, detailed audit trails • Trial Balance includes all transactions • **Flexible Chart of Accounts** • True double-entry bookkeeping • Master File capacity: 400 accounts • Monthly Transaction capacity: 1,000 with 200K diskette; 3,500 with 500K diskette; 7,000 per Megabyte with a hard disk.

ACCOUNTS RECEIVABLE provides instant, on-line customer account information (both current and aged), complete invoicing (open-item or balance forward) and statement capabilities on optional preprinted forms give your company a professional image • Quickly identify overdue accounts, speed collections, help control cash flow • Detailed and summary customer activity and aging reports • Produces 8 reports • Automatic periodic customer/client billing option • Itemized monthly transactions • Master File capacity: 400 Customers • Monthly Transactions capacity: 800 with 200K diskette; 3,500 with 500K diskette; 7,000 per Megabyte with a hard disk.

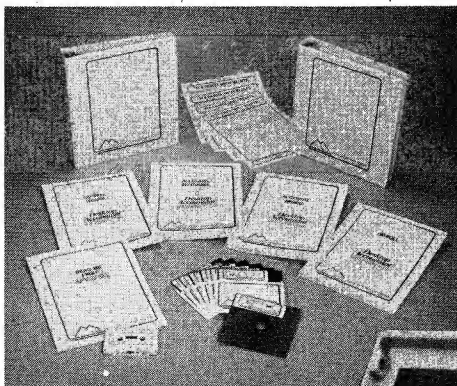
ACCOUNTS PAYABLE maintains complete vendor/voucher history and includes check-writing capabilities • **Current and aged payable reports** • Cash flow/cash requirements report • Prints checks with comprehensive check stubs • **Produces 11 reports and documents** • Automatic pay selection program allows payment by due date or by discount date • **Manual and automatic checkwriting** • Check register • Master File capacity: 400 Vendors • Monthly Transactions capacity: 800 with 200K diskette; 3,500 with 500K diskette; 7,000 per Megabyte with a hard disk.

PAYROLL—Be the office hero each week when the checks come out on time! • **Calculates payroll for every type of employee** (hourly, salaried, and commissioned) and prints payroll checks (with popular, comprehensive check stubs) with an absolute minimum of input • Maintains monthly, quarterly, and yearly totals for reporting in multiple states • **User-maintainable Federal, State, and local tax tables** • W-2 printing • 941 Reporting • Produces 10 reports • Master File capacity: 400 employees.

Why staff up? With the Desktop Accountant™, all the accounting help your office needs can be at your fingertips!

Open up a wide new range of possibilities for your microcomputer! No matter what type of business you're in, Desktop Accountant will let you manage the financial end of it more professionally than ever before.

A Complete System with Support. Desktop Accountant includes General Ledger, Accounts Receivable, Accounts Payable and Payroll programs, along with comprehensive user manuals and training aids. We've even prepared an audio cassette tape to make learning the system fast and fun. And our telephone "hotline" means personalized support whenever you need it.



Desktop Accountant's fully integrated accounting system is a complete package of software, training aids, manuals and user's newsletter.

Circle 227 on Reader Service card.

Produces 42 Reports. "Keeping the books" has never been so easy! Desktop Accountant prepares every bookkeeping and accounting report your growing business requires: from invoicing to statements to aged A/R listings; from cash distribution to A/P checks to vendor activity reports; from complete payroll checks and stubs to W-2 forms; from the chart of accounts to balance sheet and income statement, as well as many others so vital to efficient management.

Desktop Accountant is available for nearly every portable, personal and desktop computer. The system requires either CP/M® or MS-DOS™ (PC-DOS), Microsoft BASIC™, 64K RAM, two disk drives or hard disk, and a 132-column printer (or an 8 1/2" x 11" printer with compressed print mode).

You won't find better quality software at such a low price—a price we can offer now because development costs were recovered years ago. Just \$395.00 for most CP/M® formats (\$495.00 for IBM® and some CP/M formats) complete. Call for available formats.

Order Desktop Accountant today! You'll soon see why we call it **INTELLIGENT SOFTWARE FOR INTELLIGENT PEOPLE.**

ROCKY MOUNTAIN SOFTWARE SYSTEMS
Business Microcomputers and Software

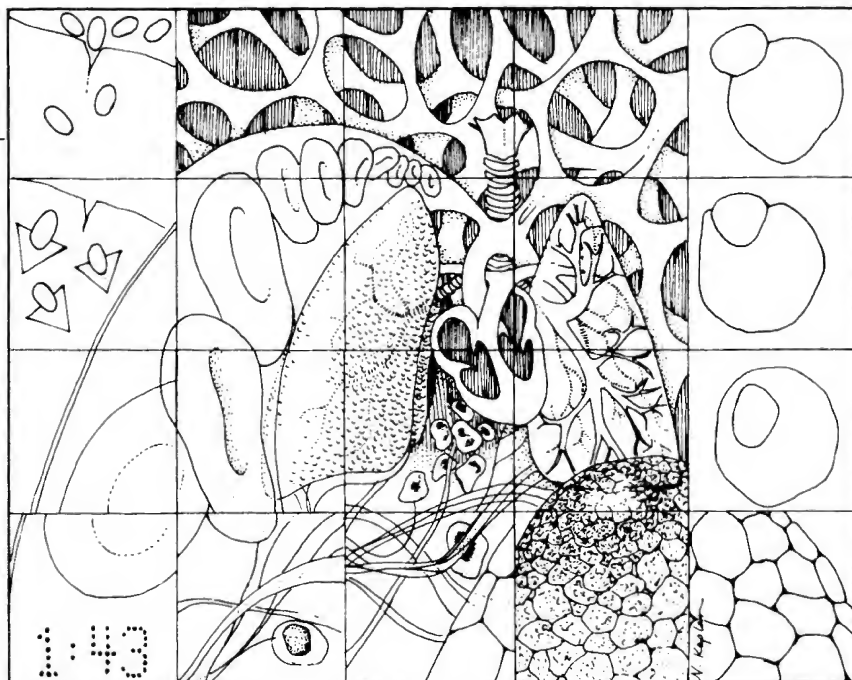
• California residents add 6 1/2% Sales Tax • Payment by VISA/MasterCard/COD/MO/Cashier's Check • All Brand Names are manufacturers' registered trademarks • No sales to Dealers • Foreign orders please call or write before ordering • ©1983 Rocky Mountain Software Systems.



To order Desktop Accountant and for more comprehensive literature, call toll-free:

1-800-832-2244
(In California call 1-800-732-2311)

or send orders to:
DESKTOP ACCOUNTANT
1280-C Newell Avenue, Suite 1221
Walnut Creek, CA 94596



the ship. You can destroy these leucocytes with the laser or, if you're hit, leave the blood vessel for repairs. Your ship is slowed down as antibodies attach themselves to the ship. Time is a factor in this game, and you must accomplish each section of the adventure without delay. The time remaining appears at the bottom of the screen.

After successfully navigating the blood vessels, you enter the heart and must pass through a series of four valves. While the paddle control is still used, your ship no longer drifts backward when the button is released. Instead, it remains in place or is moved forward when you press the button. If the ship hits one of the valves, the mission is aborted, and if you are hit by a leucocyte or bump into a vessel wall, you are sent back to the first valve-entry point. When you have passed through all four valves you will receive a survival score. At this point you can SAVE the first section of the game; this way, if your mission fails later in the game, you will begin from this point, instead of returning to the beginning of the game.

In the next two sections, movement of the ship is controlled by the computer keyboard. This change is challenging even for experienced players. To pass through the tangled

fibers of the connective tissue, you use the left-right arrows to rotate the ship and the space bar for forward motion. The laser can cut the fibers but it also forces your ship backwards with each use. If you are caught in the connective tissue fibers, your ship tumbles to free itself, using up time. The leucocytes are still present and must be avoided or destroyed. If you enter the blood vessel—your goal in this section of the game—you can move to the lungs, your next objective.

In the lungs you must slice off blobs of tar without destroying the lung wall. After slicing them off you must then ram them with the ship to destroy them. If either the blobs or the ship hit the wall, they destroy part of it. If you go through a hole accidentally, this section of the game ends. You must also cope with the up and down motion caused by the patient's breathing.

The final section, Tumors, remains under keyboard control. You must destroy the tumor, and while you can use your laser to incinerate parts of it, ramming it with the ship works better. You must disintegrate the nucleus of the tumor or it keeps on growing. The nucleus moves about, sometimes jutting out from one side of the tumor mass. The leucocytes are still present, and destroying them now requires more than one

laser blast. Time is still a factor, too. At the end of this section, your final score is displayed on the screen.

Although the science fiction aspects of the game are loosely based on human anatomy, the sketchy descriptions included in the eight-page manual are misleading, especially when coupled with the explanations of the game's objectives. Contrary to the advertisement for the game, it is not an education, but it is an excellent and challenging game.

Microscopic Journey is written by Dan Sullivan and published by Hayden Software, 50 Essex St., Rochelle Park, NJ 07662. The suggested retail price is \$34.95. ■

Janet Meizel
Davis, CA

PeachCalc

It's hard to examine a spreadsheet program without constantly thinking about VisiCalc. I'll try not to here, as PeachCalc is a significant program in its own right. The program has a couple of odd little quirks, but none detract from the fact that this spreadsheet is *good*.

Peachtree Software designed PeachCalc's 176-page, indexed manual with the beginner in mind. But I didn't care for the opening part.

You see, if you read the fine print of Peachtree's Limited Use License Agreement, you discover that you've bought just the right to use PeachCalc. In fact, the cover sheet notes: "This documentation and the software herein are the property of Peachtree Software Incorporated and are loaned to the user under the terms of a Limited Use License Agreement." And: "This material must be returned... on demand."

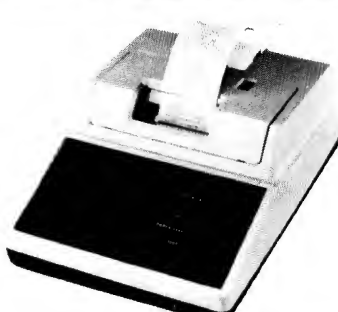
Actually, CP/M software seems to come neatly packaged with all sorts of forms to fill out and return and agreements to sign. I guess everyone just accepts it and sends all those things back. You do, don't you? And in fact, unless you plan to pass along copies of PeachCalc to someone, they really won't take it away from you.

DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES DISK DRIVES

February 1984 *Cider* 141

ONE STOP SHOPPING																									
DISKETTES 3M Scotch 5 1/4 SS/DD 1 95 5 1/4 DD/DD 2 85 8" Also Available Flip-N-File/50 (5 1/4) 1 85	PRINTERS Dot Matrix & Letter Quality <i>Many to choose from</i> Modems, Monitors, Disk Drives, Ribbons, Print Wheels Get an Alternate price first																								
Apple Software Peripherals Printers Diskettes ALTERNATE COMPUTER SUPPLY 6034 East St. P.O. Box 74 Twin Lake MI 49457 Major Brands • Low Prices • Personal Service <i>It's all waiting just for you!</i> Inquiries 616/744-1300 Orders Only 800/253-3200 ext 810 All Items F.O.B. Shipping Point	SOFTWARE SAMPLER <table border="0"> <tr> <td>Home Accountant</td> <td>74.95</td> <td>51.50</td> </tr> <tr> <td>Multi plan</td> <td>275.00</td> <td>174.95</td> </tr> <tr> <td>Miner 2049er</td> <td>39.95</td> <td>27.97</td> </tr> <tr> <td>Facemaker</td> <td>34.95</td> <td>25.95</td> </tr> <tr> <td>Master type</td> <td>39.95</td> <td>27.97</td> </tr> <tr> <td>Type attack</td> <td>39.95</td> <td>27.97</td> </tr> <tr> <td>Shamus</td> <td>34.95</td> <td>24.89</td> </tr> <tr> <td>PFS Write</td> <td>125.00</td> <td>81.50</td> </tr> </table> Our software selection is expanding daily Please send specific requests	Home Accountant	74.95	51.50	Multi plan	275.00	174.95	Miner 2049er	39.95	27.97	Facemaker	34.95	25.95	Master type	39.95	27.97	Type attack	39.95	27.97	Shamus	34.95	24.89	PFS Write	125.00	81.50
Home Accountant	74.95	51.50																							
Multi plan	275.00	174.95																							
Miner 2049er	39.95	27.97																							
Facemaker	34.95	25.95																							
Master type	39.95	27.97																							
Type attack	39.95	27.97																							
Shamus	34.95	24.89																							
PFS Write	125.00	81.50																							
WHOA THERE PARTNER! A postcard with your name & address will bring our current BEST SELLERS - BEST BUYS Listing . . . Pronto																									

Circle 168 on Reader Service card.



Dot Matrix Printer Interfaces with Apple II
 Featuring an Apple II-compatible parallel interface, Addmaster Corporation has produced a new dot matrix printer, Model 170. The interface includes a Centronics-type handshake and DB-25 interface connector, Baudot, and day — and time clock. The Model 170 provides 18 or 21 characters per line, 6 lines per inch print density, on standard 2 1/2" adding machine tape. Designed to use with personal computers, Model 170 will produce hard and carbonless copies of programs, data or results. Write Addmaster Corporation, 416 Junipero Serra Dr., San Gabriel, CA 91776 or call 213/285-1121.

APPLE 9 TRACK TAPE DRIVES	
EXCHANGE DATA WITH MINIS & MAIN FRAMES	
<ul style="list-style-type: none"> • DATA COLLECTION • DATA REDUCTION • MAILING LISTS • GOVT TAPES • DISK BACKUP 	<ul style="list-style-type: none"> • LANDSAT • SEASAT • E-COM • ZIP-4 • CRIS
	
EXPAND YOUR APPLE TO READ/WRITE 9-TRACK MAG TAPES IN STANDARD ANSI-IBM 800 BPI (NRZI) FORMAT	
<ul style="list-style-type: none"> • 800 BPI NRZI DRIVES WITH CONTROLLER AND SOFTWARE From \$1800 • Controller and Software Alone \$900 	
Request Full Brochure ELECTROVALUE INDUSTRIAL INC. P.O. BOX 376 - WG MORRIS PLAINS, NJ 07950	
 201/267-1117	

Software Reviews

This fancy rental plan is just like buying.

The manual is divided into four tabbed sections: General Information, Self Instruction, Reference Guide and Appendices. There's a useful table of contents and a vinyl quick reference card.

The introductory section presents an overview of the system, and notes you have a worksheet 63 columns wide and 254 rows deep. One thing you'll notice right away is the Help function (which you can access at any time by pressing the ? key). This function calls up various Help screens. It's a good idea.

The manual also notes PeachCalc's ability to protect blocks of information. The only way to access this data is to "unprotect" it. This is terrific for the person who might want to design templates and then have a less experienced person enter the information.

There are 12 lessons in the introductory section. Since PeachCalc is designed to work on about any CP/M system, you have the use of an 80-column display. But because the program can be run on different computers, the display varies with each one. Your active block—depending on the computer you have—may be shown in inverse video, with an underscore, or with the symbols < >. Well, with Apple you get < >.

Unfortunately, the information in the active block is obscured by the brackets. This isn't really serious, as long as the user is aware of it and doesn't misread an entry. The brackets (< >) only show in the active block, of course. And you do see a lot of data. With column widths set initially at 9 characters, you get 8 columns across, with 20 rows deep.

You can manually adjust the width of any or all columns up to 127 characters long. This is really good for titles and other textual information, and many users will set column A much wider than the other columns, as it's often used for text. You don't have to be working in a column to change its width either. You simply indicate which column you want to adjust.

You can actually format a column to a zero width. Widths of 0 to 2 do not display the column name (A, B, C and so on), but will accept data. With the width set at 1, you won't see anything. If the width is 2, you'll see one character of the information. A width of 3 or larger will display the column name and as much information as it can. And the program automatically spills text over into the next column, if it's not in use. So if you had your column widths set at 9, for instance, and wanted SALES BY DIVISION in row 1, SALES BY D will fill the first column and IVISION will fill the next.

PeachCalc lets you move around the screen and worksheet quickly. You can go to any block with the = command (=A5 takes you to A5). You also can use the arrow keys to move up and down and side to side. A little marker at the bottom of your screen shows you which direction you're going. PeachCalc does not buzz at you when you hit the edge of the screen.

You enter numbers as they are. Text has to be preceded with a double quotation mark ("). If you just enter SALES, PeachCalc responds with Formula Error. It must go in as "SALES. This leading quotation mark does not display; it just informs PeachCalc that you're entering text. Formulas can be entered directly (B4 * C15), rather than as (+B4 * C15).

You clear the screen with the ZAP command; you're asked to verify your intentions. You must verify before the program will overwrite an existing disk file. In fact, the error handling is excellent. I could not get the program to crash or lose data.

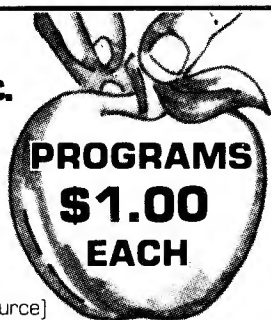
The manual, as noted, is for the beginner. It could go just a bit farther in its initial explanations. Too often, all details of a command are not explained in the self-instruction section. Information on all the commands is there later on in the reference guide, but I was left wondering about this or that until I finally found it further on.

PeachCalc includes math functions like TANGENT, NPV (net present value), PI, SQRT (square root) and others, but they are not explained fully.

APPLEWARE, INC.

The Apple Users Group
Software Library Bonanza
At truly affordable prices!

For the first time enjoy your
Apple to its fullest capacity,
using specially **packed disks**
with over 60 outstanding
programs each.
(not available from any other source)



Each packed disk includes an extensive variety of
interesting, useful and entertaining programs
indispensable to all computerists! Each mixed category
packed disk includes:

BUSINESS • EDUCATIONAL • DATA BASE • GAMES
UTILITIES • SCIENCE • MUSIC • GRAPHICS • FINANCE

Library Disks I, II and III are mixed categories. Dedicated
disks are:

• GAMES • UTILITIES • GRAPHICS • INTEGER •
SCIENCE & TECHNOLOGY. Each packed disk is
available for only **\$59.95 each.**

WHY PAY MORE?

Order direct from this ad and **Save up to \$150.** Buy
Library Disks I, II and III and get a special bonus disk
FREE - over 260 programs for \$179.95 + \$3.
shipping. For the best value, receive all 9 disks featuring
over 600 of our best programs for **only 65¢ each** -
for a package price of only \$389. Postage Paid!

NEW... Business • Professional • Executive Package (enabling
you to bring your business to its highest level of efficiency) also
available, circle Readers Service Card for our complete catalog.

For Orders Only Call now
TOLL FREE: 1-800-327-8664
Florida: 1-305-987-8665



Compatible with II, II+, IIe, III Emul., and Franklin Ace (For 3.3 DOS)



TAKE -POSITIVE CONTROL- OF YOUR INVENTORY & ACCOUNTS RECEIVABLE

-POSITIVE CONTROL- is a **FULLY INTEGRATED, POINT-OF-SALE** System
Designed for Accuracy, Maximum Reliability, Ease of Operation and Simplicity.

INVENTORY	BILLING	ACC REC
<ul style="list-style-type: none"> • POINT OF SALE • 1990 ITEMS • MULTIPLE REPORTS <ul style="list-style-type: none"> - MIN. PROFIT MARGIN - RE-ORDER POINT - MIN. DAYS ON HAND • ON LINE QUERY 	<ul style="list-style-type: none"> • ORDER ENTRY • PICK TICKETS • INVOICING FROM ORDER OR POINT OF SALE • AUTOMATIC POSTING TO A/C AND INVENTORY • DAILY SALES JOURNAL • UP TO 7 TAXING ENTITIES 	<ul style="list-style-type: none"> • 300 ACCOUNTS • STATEMENTS • TRIAL BALANCE • AGING REPORT • YTD SALES & PROFIT BY CUSTOMER

System is Fully Copyable for Back-up Convenience. Requires Apple//e* and 80
Column Card, Two Disk Drives, Dot Matrix Printer (132 Column Compressed Printing).

OTHER SYSTEMS MAY CLAIM TO HAVE THESE FEATURES

-POSITIVE CONTROL- HAS THEM!

• PROFESSIONAL TELEPHONE SUPPORT •

SEE FOR YOURSELF - CALL OR WRITE TO ORDER

DEMO DISK & MANUAL - \$25

COMPLETE SYSTEM - \$250

(DEDUCTIBLE FROM FINAL PURCHASE)



ALPINE COMPUTER SYSTEMS

P. O. Box 128
ALPINE, TEXAS 79831
(915) 837-2501

*Apple is a Registered Trademark of Apple Computer, Inc.

WHEN THE CHIPS ARE DOWN ...

"master diagnostics + plus"

It's reasonable to suspect that every Apple owner has wondered at some time or another, if
all those chips are working up to par, or if it's time for Disk Speed Calibration, Head Cleaning or
General Maintenance.

Master Diagnostics Plus is a comprehensive diagnostics package for the Apple computers.
As a diagnostic set, it can save unhooking all the peripherals and carrying an Apple to the dealer
every time a minor hardware problem is suspected or periodic maintenance procedures are
required, such as **DISK SPEED CALIBRATION, MONITOR ALIGNMENT, DRIVE HEAD CLEANING,**
etc., etc. Necessary maintenance is made easy by the routines and documentation provided.

For those without a service center nearby, the diagnostic routines can save travel or shipping
and considerable downtime for minor problems. Anyone fighting glitches in a program would rest
a little easier knowing the computer, at least, is working properly.

Master Diagnostics Plus is an impressive collection of diagnostic routines for the Apple II
and Apple II Plus. It is capable of supplying sufficient information so you know whether or not
your computer is performing normally. Regular use of the maintenance routines and supplies will
help to insure top-notch operation. The peace of mind afforded by being able to regularly monitor
computer performance is well worth the price of the program. This package should be in the library
of every Apple user. Also received "AAA" reviews in every U.S. Micro Mag.

Specify Version II or IIe

REQUIRES: 48K, FP IN ROM

1 DISK DRIVE, DOS 3.3

unlimited warranty

master diagnostics TM **\$55.00**

master diagnostics + plus **\$75.00**

THE TESTS INCLUDE

MOTHERBOARD ROM TEST
APPLESOFT CARD TEST
INTEGER CARD TEST
MOTHERBOARD RAM TEST
16K RAM CARD TEST*
AUX RAM TEST*
80 COLUMN CARD TEST*
PARALLEL CARD TEST
SPEAKER FUNCTION TEST
SQUARE WAVE MODULATION
ON BOARD HELP

DISK DRIVE SPEED CALIBRATION
DRIVE HEAD READ/WRITE TEST
WRITE PROTECT SWITCH TEST
DRIVE HEAD CLEANING ROUTINES
DISK DRIVE MAINTENANCE
DC HAYES MICROMODEM II TEST
PADDLE & SPEAKER TEST
PADDLE & BUTTON TEST
PADDLE DRIFT TESTS
INTERNAL MAINTENANCE
FORTY PAGE MANUAL

MONITOR SKEWING TESTS
MONITOR & MODULATOR CALIBRATION
MONITOR TEXT PAGE TEST
MONITOR TEST PATTERN
MONITOR & TV YOKE ALIGNMENT
LO-RES COLOR TESTS
HI-RES COLOR TESTS
LISSAJOUS PATTERNS
RND. HI-RES COLOR GENERATOR
GENERAL MAINTENANCE
* APPLE //e

THE + plus

master diagnostics + plus provides everything needed to maintain your computer.
The entire package is housed in our own molded case to protect against static
electricity, x-ray and other contaminants.

Included in the kit is:

- THE DIAGNOSTICS DISKETTE
- FORTY PAGE PROCEDURE MANUAL
- HEAD CLEANING KIT + 2 CLEANING DISKS

- CRT SCREEN CLEANER
- COMPUTER/DRIVE HOUSING CLEANER
- REUSEABLE CHAMOIS TIPPED WANDS

ORDER TOLL FREE ANYTIME or SEE YOUR NEAREST DEALER

MasterCard, Visa & C.O.D. users call: 1-800-835-2246

Kansas Residents call: 1800-362-2421

Add: \$5.00 shipping outside U.S. & Canada

NIKROM®

Technical Products, Inc.

25 PROSPECT STREET • LEOMINSTER, MA 01453



APPLE is Registered Trademark of Apple Computer Co.

ly. They're not in the index. The program can use the conditionals AND, IF, OR and NOT; IF comes with a brief example and the others are on the quick reference card but aren't listed in the index. LOOKUP has a limited example. Functions like AVERAGE, SUM, COUNT, MIN and MAX have short paragraphs about them, but aren't in the index, either.

PeachCalc is powerful. You can move rows or columns. You can copy them too. COPY, by the way, won't reproduce blank spaces. However, the BLANK function will blank out either a single entry or a range of blocks.

You can repeat values or formulas over columns or rows, just like you can replicate them in that other program we're not going to mention. You can have titles and windows and split screens and scrolling and simple *** graphs. There is good advice on the formula to use to scale an asterisk graph properly, no matter how large its numbers are.

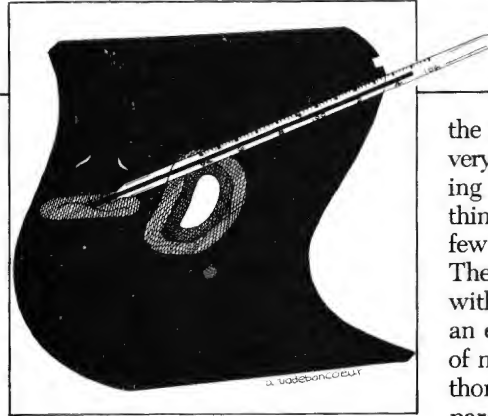
You decide if you want manual or automatic recalculation. You format your entries. You can insert rows or columns (and delete them, too), and you can overlay worksheets. All this and you can protect areas, too.

The 18 available commands are mnemonic—/E means you want to edit; /P means you want to protect an entry; /O tells PeachCalc you wish to output something and so on.

You can load or save all or part of your worksheet. And PeachCalc is not copy protected. In fact, one of the first things you're told to do is to make a copy of the program on a disk with CP/M on it.

You do need to have a program disk on-line, as PeachCalc loads from the disk every time you change functions. /B means you want to blank something out, so the disk whirs briefly. Then you can blank as much as you want. When you want to, say, format an entry, /F lets you do so, with another quick disk access. Basically, any change in function requires a moment of disk time.

The information you see—besides having a lot of columns available for display—is very good. You see how



much memory you have available, which direction you last moved, the active block location, the format, the protection and the contents of the active block.

You can print any or all of the sheet, of course, with the interesting option to print to the screen, which gives you the chance to see your report before you waste any paper. In sum, the program is powerful, works well, and won't crash on you or lose information.

PeachCalc is manufactured by Peachtree Software Inc., 3445 Peachtree Road NE, Atlanta, GA 30326. Price is \$395. It is part of Peachtree's middle-market Peachpak 4 package. ■

Greg Glau
Prescott, AZ

Home Health Disk

The Home Health Disk package provides information on specific medical problems, medical emergencies and how to save money on medical costs. Its two menu-driven disks may be run on an Apple II or Apple IIe, one disk drive and monitor. The publisher warns that with the Apple IIe, Y or N answers to questions must be capitalized for the program to run properly.

Home Health Disk is a series of printed pages displayed on the monitor of your computer. These pages contain information on various medical topics. The author, Dr. Charles Buckley Jr., expresses many personal opinions throughout. For example,

the section on cigarette smoking is a very convincing polemic against smoking and contains, among other things, a vivid description of the last few years of life with emphysema. There is a separate section dealing with the benefits of meditation, and an essay about the varying usefulness of medications. In this section the author states, "Almost all diarrhea preparations except Pepto Bismol are ineffective, as are decongestants." Predictably, some of the statements are open to debate.

The disks themselves run well, if slowly. As per the publisher's notes, you must sometimes press return twice to view another screen. The program's text screens are often difficult to read. Lines of text are very close to one another and where words were removed there are holes. The spacing and grammatical errors could be eliminated by careful editing of the next edition.

When the first disk is booted, the user is asked if this is an emergency situation. The Yes answer brings a list of emergencies that require an ambulance. There is also a Relative Emergency list that covers situations where a physician should be seen, but an ambulance need not be called. You can then call up the specific situation to get more information. Under the Poison heading, along with the information on what to tell the poison control center advisor, there is a space where the number of the nearest poison control center can be entered. This is vital if you plan to use the Home Health Disk in an actual emergency.

Numerous medical topics are discussed, some more thoroughly than others. A large menu gives you the choice of topics. You must view all three pages of the menu before entering your choice. Then a small section of the menu is shown from which you choose again.

The booklet that comes with the disks contains the menus from disk #1, instructions for use, a bibliography and statements of the policies of Brahman Software.

The publisher's customer support policies are generous. If the buyer is

PLAY STRIP BLACKJACK

WITH 'CHYRL'
The Program Supplies 'Chyrl'
Hi-Res • Color • Sound
A LITTLE NAUGHTY
Watch Chyrl take it off/ALL OFF!

FREE!
PICTURE DISK
WITH PURCHASE
OF
STRIP
BLACKJACK

**LIMITED
OFFER**

Buy Strip
Blackjack at
the regular price and
receive a \$24.95 picture
disk FREE. This program,
with picture disk, gives you 7
beautiful players — 2 male and 5
female.
Previous customers update-send pro-
gram disk plus \$10.00.

**NOT FOR
CHILDREN**

2 DISKS..... \$29⁹⁵



NEW!

Pin Up JIG SAW

**WITH 10 BEAUTIFUL
SEXY PICTURE PUZZLES!**

Remember how much fun it was to spread a large Jig Saw puzzle out over mom's dining room table, and spend hours putting the pieces together? Well, now you can work large Jig Saw puzzles right on your Apple Display. And what Puzzles they are. For example, one of the pictures is Chyrl from "STRIP BLACKJACK" relaxing, at home. There are 9 other sexy puzzles of both female and male that are just as much fun. In the good old days you would work your puzzle just to find that the last piece was missing. Not with this super fun game. You never lose a part of any of your puzzles. They stay stored on one 5-1/4 Floppy disk and the square puzzle pieces fit nicely time and time again right on the display monitor with the special puzzle editor.

You get all these features to choose from.

1. You select the puzzle size from very easy to very hard.
2. Scoring has been added so you can play against a friend.
3. Winning names are saved on disk to challenge future players.
4. The program comes with 10 Beautiful Colorful Sexy puzzles.
5. A save buffer on the disk is provided to save your picture and score so one puzzle might be worked over many evenings.

6. A help feature allows you to view your present score or the puzzle as it should look at any time during the game.

There's a whole new world of fun with Pin Up JIG SAW.

**ON DISK
\$29⁹⁵
PRICE**

SEX-O-GRAPHIC

BASED ON THE THEORY OF BIORHYTHMS
Theory of Biorhythms states that there are three cycles in everyone's life that start when they are born. The Physical, Emotional, and the Intellectual. This program is used to find your location on life's biorhythm scale for all three of these cycles. In addition, your SEX-O-GRAPHIC is also computed as part of your biorhythm cycle. It's all done in Hi-Res COLOR with sound. A complete monthly chart is provided. At any time, you have the option of printing the Hi-Res display on an MX80* Printer with Graphics. Now you can know your SEX-O-GRAPHIC every day. This could give you that extra confidence to win new friends, improve business relations or influence that loved one.

**START EVERY DAY WITH
* YOUR SEX-O-GRAPHIC ***
Disk Price \$19.95

*MX80 is a trademark of EPSON
SALE PRICE \$12.00

COMPRESS/EXPAND

A MUST FOR ANY SERIOUS PROGRAMMER
Most Apple* picture files take up to 34 disk sectors of storage. This limits the number of pictures that can be saved on one disk. The SANSOFT PLUS COMPRESS/EXPAND system allows you to process any standard picture file and compress it into a much smaller file that requires less disk space. Some pictures can be compressed by as much as 90% requiring only a few sectors depending on picture complexity. Since less sectors are used, Pictures load faster requiring less disk time. A small routine requiring less than 256 bytes can be loaded into anyone of several locations and be called from your programs allowing amazing results as your high quality pictures appear in less time with NO loss of quality. This program comes on an unprotected disk that can be copied and backed up.

**NO PROGRAMMER SHOULD BE
* WITHOUT THIS ONE ***
Price \$20.00

LUCKY SLOT

A COLORFUL FUN SLOT MACHINE
This one is better than a trip to Las Vegas. It turns your computer into a SLOT MACHINE that allows you to decide how much you want to bet and you can even buy odds. With each try at buying odds, there is always the chance that the magic arrow will step all the way to the first slot window and that window will be a WILD CARD that will match almost anything. And, of course, there is that magical SUPER CARD that sometimes appears and you are an automatic winner. There's more sound and action and excitement than ever when you play LUCKY SLOT. So get ready to place your bet on the wildest, funnest SUPER SLOT MACHINE of all time—LUCKY SLOT. High winning players names saved on disk to challenge future players. ★ MAKES A NICE GIFT ★

Disk Price \$24.99
SALE PRICE \$14.95

SANSOFT PLUS

P.O. Box 590228

Houston, Texas 77259-0228

We welcome Telephone orders (713) 482-6898
ELECTRONIC ORDER TAKER 24 hours a day. 365 days a year.
C.O.D. OR USE YOUR VISA OR MASTER CARD OR ORDER BY MAIL WITH CHECK,
OR MONEY ORDER. WHEN USING YOUR CHARGE CARDS BY PHONE OR MAIL
PLEASE GIVE CARD NUMBER AND EXPIRATION DATE.

— FREE GIFT SHIPPED WITH EACH ORDER —

ALL ORDERS PROCESSED QUICKLY. ADD \$2.00 POSTAGE AND HANDLING. ALL ORDERS
SHIPPED FIRST CLASS IN U.S.A. ALL PROGRAMS RUN ON APPLE II, II+, IIe*, or FRANKLIN**

*APPLE IS A TRADEMARK OF APPLE COMPUTER CO.,

**FRANKLIN IS A TRADEMARK FOR FRANKLIN COMPUTER CORP.





dissatisfied the disks may be returned for a full refund for three weeks after the purchase date. The company will replace defective disks at no charge for one month and provide back-up disks for a charge of \$10.

While Dr. Buckley acknowledges that 80% of medical information will not change during a one- or two-year period, he nonetheless feels that the ability to provide a current source of information that can be updated easily may make the disk presentation a worthwhile purchase.

Home Health Disk is available from RAM Resources Inc., 100 Lynn St., Peabody, MA 01960. ■

Janet Meizel
Davis, CA

Editor's Note: According to the manufacturer, the latest version of the program is called Personal Health. It is written in Pascal and is priced at \$49.

Peachtree's Accounts Payable

If you're like the normal businessperson, anything that has to do with accounts payable probably makes you queasy.

Well, Peachtree's A/Pay system can't pay your bills for you, but it does provide excellent internal controls along with helpful functions that let you "automate" what you owe.

To use Peachtree's Accounts Payable system, you must have 64K RAM, two disk drives and a Microsoft Softcard. Place a CP/M disk in drive A (drive 1) of your Apple and turn your Apple on. Once you see the A> prompt, type MBASIC to load it into memory. Then type RUN AP MENU to activate the system.

When you buy something on credit, you receive an invoice for the product(s). Peachtree calls these vendor invoices "vouchers." You enter each voucher's data into your accounts payable system, allowing you to distribute the information. If an invoice (voucher) totals \$119.83, perhaps \$95.00 was the item's cost,

\$15.00 went for crating charges, while \$9.83 represents freight costs.

From your own cost accounting standpoint, you need such a breakdown to see where your dollars are going. You'd do even better with a system that reports the summaries of all transactions to your general ledger. The payable system should also provide printouts that show what you owe, whom, and for how long.

Your vendors might stick you with finance charges if you fall behind, so your payables program should be equipped to add any late charges into the total owed, and also to track them as a separate expense item.

The same holds true for discounts. If a vendor offers you a discount on a purchase, your accounts payable system should calculate the discount, and also advise you when to pay to qualify for the reduced price. This is the heart of an accounts payable system.

How does Peachtree's Accounts Payable system stack up?

The Manual

The 114-page manual (plus appendices) lacks an index, but contains useful information on how a payable system works. A flowchart illustrates how its 14 application programs operate. The system is completely menu-driven, as are the other Peachtree Series 40 packages.

The brief tutorial section lodged in the back of the manual doesn't help much. Apparently, the manual's sample printouts were to match the information on the program's sample data disk. Somehow, they don't. Therefore, you need printouts of the sample disk's data before you can access it. After all, you can't look up

someone's account unless you know their account number.

Since the manual is Version 1.1 and the disk is Version 5.2, perhaps Peachtree goofed. But once you get your actual programming underway, the system and manual coordinate flawlessly.

The date entry area, like the entire package, is completely idiot-proofed. Though you cannot enter an invalid date, you can input any year you'd like, making this package applicable into the 21st century. And, if you turn off the system before you END a particular process, it beeps upon restarting and properly closes the files.

You have room for approximately 900 "spots" on your data disk; each vendor file requires two spots. Thus, if you have 100 vendors, you're allowed about 700 transactions during a month. If you have 250 vendors, you can enter only about 400 transactions per month. With luck, that's enough for you.

It's Peachy

Peachtree conveniently provides two extra address lines for suppliers with both a street address and a PO box. Your account number is made up of six alphanumeric characters.

The system also offers complete "auditability." You accomplish this by opting to prevent anyone from deleting a transaction. Then, when you make a mistake, you enter a reverse entry to cancel the incorrect amounts, and re-enter the transaction with the correct figures. That way, your accountant can follow each transaction all the way through. He'll love it.

If you prefer, tell Peachtree's Accounts Payable system to let you delete transactions, just as you'd erase entries from your manual journals. However, this—as you might expect—can cause all kinds of imbalances within your books. In either case, the choice is yours.

Each vendor account includes fields for quantities bought annually from suppliers, and amounts paid to them. The program also indicates the number, date and amount of the last

Northeastern Software

101 William Henry Drive, Monroe, CT 06468

UP TO 50% DISCOUNT

Program	Games	List Price	Our Price
Starcross		39.95	27.00
Maze Craze		39.95	30.00
Lode Runner		34.95	24.00
Eagles		39.95	30.00
Flight Simulator II			Call
Ultima III - Exodus		54.95	41.00
Death In the Caribbean		35.00	26.00
The Quest		19.95	13.50
Sargon III		49.95	37.50
Castle Wolfenstein		29.95	20.00
Ringside Seat		39.95	30.00
Minit Man		19.95	13.50
Suspended		49.95	34.00
Fortress		34.95	26.25
Zork I, II, or III		39.95	27.00
Flight Simulator		33.50	27.00
Witness		49.95	34.00
Deadline		49.95	34.00
Time Zone		99.95	65.00
Queen of Hearts		34.95	26.25
Wizardry		49.95	36.00
Knight of Diamonds		34.95	25.00
Frogger		34.95	24.00
Sargon II		34.95	25.00
Cubit		39.95	29.00
Cosmic Balance II		39.95	29.00
Quest for Tires		34.95	26.25
Miner 2049er		39.95	31.00
Bomb Alley		59.95	41.00
Geopolitique 1990		39.95	29.00
Epidemic		39.95	29.00
Critical Mass		39.95	27.00
U-Boat Command		29.95	20.00
Zaxxon		39.95	28.00
Enchanter		48.95	37.50
The Dark Crystal		39.95	27.00
The Serpent's Star		39.95	27.00
Odesta Chess 7.0		69.95	52.00
Caverns of Freitag		29.95	20.00
North Atlantic '86		59.95	43.00
Caverns of Callisto		34.95	26.00
Germany 1985		59.95	41.00
Ultima II		59.95	41.00
Rendezvous 1.1		39.95	27.00
Titan Empire		34.95	24.00
Legacy of Lilygamyn		39.95	29.00
Wiz Plus		39.95	27.00
Broadsides		39.95	29.00
Microbe		44.95	30.00
Beagle Bag		29.50	20.00
Beneath Apple Manor Spec. Ed.		29.95	20.00
Plasmania		34.95	24.00
Sammy Lightfoot		29.95	20.00
Stellar 7		34.95	24.00
Super Taxman II		24.95	18.00
Choplifter		34.95	24.00

Program	BUSINESS	List Price	Our Price
DB Master Ver. 4		350.00	230.00
BPI General Accounting		395.00	298.00
Apple Writer IIE		195.00	165.00
Apple Logo		195.00	160.00
The Incredible Jack		179.00	115.00
Magic Calc		149.95	95.00
The General Manager II		229.95	150.00
Magic Window II		149.95	95.00
Screenwriter II		129.95	82.00
The Word Handler II		59.95	42.00
Stock Portfolio System		185.00	120.00
The Dictionary		99.95	65.00
Supertext - Pro		99.00	70.00
FCM/FL		99.95	71.00
Real Estate Analyzer II		195.00	120.00
Pie Writer (New Version)		149.95	105.00
Multiplan		250.00	175.00
Homework		49.95	37.50
Dow Jones Market Analyzer		350.00	275.00
Format II Enhanced		150.00	105.00
Word Juggler //E		239.00	185.00
Zardax		210.00	145.00
Sensible Speller		125.00	82.00
PFS: File		125.00	82.50
PFS: Report		125.00	82.50
PFS: Graph		125.00	82.50
PFS: Write 2E		125.00	82.50
Money Street		99.00	78.00

Program	EDUCATIONAL	Our Price
In Search of the Most		27.00
Amazing Thing		20.00
Hey Diddle Diddle		23.00
Facemaker		31.00
Snooper Troops 1 or 2		24.00
Story Machine		20.00
Kindercomp		41.00
Delta Drawing		20.00
Rhymes and Riddles		29.00
Sticky Bear Numbers		29.00
Sticky Bear ABC		29.00
Sticky Bear Bop		29.00
Old Ironsides		37.00
Rocky's Boots		33.00
Gertrude's Puzzles		33.00
Gertrude's Secrets		29.00
Bumble Plot		29.00
Bumble Games		22.00
Juggle's Rainbow		20.00
Compu-Read		34.00
Compu-Math		60.00
Computer SAT		27.00
Spelling Bee w/Primer		27.00
Algebra 1 2 3 or 4		34.00
SAT Wd. Attack Skills		34.00
PSAT Wd. Att'k Skills		24.00
Whole Brain Spelling		59.00
The New Step by Step		52.50
Speed Reader II		34.00
Decimals—Eduware		37.50
Fractions—Eduware		37.50
Math Blaster		20.00
Counting Bee		20.00
Troll's Tale		20.00
Dragons' Keep		24.00
Learning With Leeper		30.00
Fat City		19.00
Bop-A-Bet		59.00
Hands On Basic		

SPECIAL DISCOUNTS	
Locksmith 5.0	73.00
Replay II	110.00
Wildcards	Call
E.D.D. (Best Nibble Copier)	68.00
Back it up III	56.00
Apple IIe Computer	Call
Franklin Computer	Call

Program	HOBBY	List	Our Price
Dos Boss		24.00	16.50
G.P.L.E. (Beagle)		49.95	37.50
The Graphics Magician		59.95	41.00
Disk Quick		29.50	22.00
Gibson Light Pen LPSII		349.00	249.00
Beagle Basic		34.95	24.00
Copy II Plus		39.95	28.00
Pronto Dos		29.50	20.25
Utility City		29.50	20.25
Double Take		34.95	24.00
Typefaces		20.00	14.50
Apple Mechanic		29.50	20.25
Applesoft Compiler		175.00	126.95
Alpha Plot		39.50	27.25
Bag of Tricks		39.95	29.95
Merlin Assembler		64.95	47.00
Merlin Combo Pack		119.95	80.45
Dollars + Sense		100.00	72.00

Program	HOME	List	Our Price
Home Accountant		74.95	48.00
ASC II Express: Pro.		129.95	85.00
Time is Money		90.00	65.00
Typing Tutor II		24.95	18.00
Bank Street Writer		69.95	52.00
SAT English I		30.00	21.65
Master Type		39.95	27.45
Micro Cookbook II/IIe		40.00	27.50
Soft Term II		195.00	168.00
The Accountant		129.00	95.00

Item	ACCESSORIES	Our Price
System Saver		70.00
Hayes Micromodem/Smart Com I		250.00
TG Paddles		28.55
Hayes Joystick		Call
TG Joystick		40.95
TG Select-A-Port		40.95
Microsoft Softcard		238.95
The Grappler		125.00
Microsoft RAM Card		75.00
Kraft Joystick		40.00
Mockingboard		Call
Corvus Hard Disks		Call
Ultraterm		295.00
Accelerator II		475.00
Koala Pad		90.00
E-Z Port II		28.00
Saturn 128K RAM		375.00
Novation Apple Cat II		259.00

Item	MEDIA	Our Price
Elephant 5 1/4 SSSD/10		20.00
Verbatim 5 1/4 SSSD/10		28.00
Maxell 5 1/4 SSSD/10		28.00

A New Software Company



For Fast Delivery send cashier's check, certified check or money order. Personal and company check allow 3 weeks to clear. Shipping - Software (\$2.50 minimum). C.O.D. add an additional \$1.75. Shipping - Hardware (please call). Alaska, Hawaii, Canada, P.O. APO and FPO \$5.00 minimum. Foreign orders - \$15.00 minimum and 15% of all orders over \$100. Mastercard & Visa (include card # and expiration date). Connecticut residents add 7.5% sales tax. We ship same day for most orders. Prices subject to change without notice. School purchase orders accepted. All returns must have a return authorization number. Call 203-268-1850 to obtain one before returning goods for replacement.

If something you would like is not listed, just call. If we don't have it, we can get it.

ORDERS ONLY
TOLL FREE - 7 DAYS/WK
1-800-382-2242

For Inquiries and Connecticut Orders Call (203) 268-1850

check you sent each vendor. If any balance remains in a vendor account, you cannot delete that account.

You can mark vendors as "auto entry" accounts, programming the system to create and automatically post invoices each month, per your instructions. This feature is ideal for bank loans, rent, and any regular payments.

For regular transactions you can distribute each invoice's details among up to eight accounts (materials, freight, permits, office supplies, legal, accounting, and so on). With automatic entry accounts, you are limited to two breakdowns. However, for automatic entry files such as rent or loans, this should suffice.

You enter transactions as a batch, up to 99 at a time; they are posted automatically. Peachtree's Accounts Payable system double-checks your entries properly, but it doesn't double-check any account numbers that will receive this information. A general ledger system, of course, won't accept any numbers for which it does not have an account. But if you let the Accounts Payable package stand alone, you can input any five-digit account number you like.

Pros and Cons

The program's reports and printouts are at the same time its weakest and strongest features. On the plus side, the system prints aged receivable reports for you, and you choose the date on which the aging will occur. It also prints a unique cash requirement report that lets you know exactly how much cash you need to pay the bills you select, and even incorporates discounts.

When you select which invoices to pay, you can instruct the system to pay those due on a due date, or individually. If you ask to pay all invoices due immediately, the system indicates how much cash you need. You can then delete or add invoices, depending upon your cash supply.

It's difficult to trick this program. I entered a large credit into an ac-

count, giving that vendor a credit balance, and then told the system to print a check to that supplier. It would not, although it did print a check "register" to show why the check wasn't printed.

If an account has an open credit, the program automatically deducts it from any check you write to that vendor. That ensures you don't forget to deduct the credit from a payment.

But not everything is perfect. The checks come with their information stub on top. While they look nice, you can't run them through a check-writer unless you tear off the stub. That defeats the whole purpose.

The system prints up to 12 invoices on a check. Many vendors have more than 12 invoices in the system, but Peachtree's Accounts Payable allows only one check per vendor (per print run). So, if you have a vendor to whom you owe 32 invoices, this program lists the first 12 on one check, writes VOID on the check, lists the next 12 invoices on the next check, writes VOID on it, and eventually reaches the last check, which shows the final amount.

While this is one way to handle more invoices than will fit on a check, it's rather unusual.

This program numbers checks for you, but that's more trouble than it's worth. For instance, if you want to use the same checks for payroll, you *must* buy a payroll program that also numbers your checks as it prints them.

You always must keep track of your check numbers. If you write checks for miscellaneous items, and if you want to have only one supply of checks, you'll have to hand-number them all.

And if you write a check by hand to pay a voucher already entered into the Accounts Payable system, you've got problems. You cannot go back and just enter the data from that hand-written check. Since this package is designed to write *all* payable checks for you, you're better off to let it. For miscellaneous expenses, you can either let the system write its own check and then void it out, or re-enter the voucher as paid. There should be

a simpler way.

Your printer must be in slot 1 inside your Apple, and there's no way to send the printer control codes. Since this package requires a 132-column printer, you'll likely have to instruct yours to print in compressed characters, so they'll all fit on the page. Table 1 lists the procedure to produce proper printouts with an Epson MX-80 F/T and Peachtree's Accounts Payable program.

Conclusion

Aside from minor difficulties with check-printing and the inherent distaste for accounts payable in general, the businessperson will enjoy this package. It truly automates your payables; it lets you know exactly what you owe to whom and for how long. It creates checks for your purchases. And though I don't care for the style of these checks, you may like them.

At \$400 it's not cheap. But Peachtree's Accounts Payable program does just about everything you desire. It's available from Peachtree Software Inc., 3445 Peachtree Road N.E., Atlanta, GA 30326. ■

Greg Glau
Prescott, AZ

Peachtree's Accounts Receivable

In the old days, an accounts receivable clerk wore a green eyeshade, thick glasses, and carried around a big black ledger. Today he works without this paraphernalia (except perhaps the glasses), and sits peering at a monitor extracting summaries, reports, statements and invoices from a microcomputer using an accounts receivable program.

Such a program should inform the business owner "who owes what." How much do they owe you? For how long? Have you sent an invoice? Statement?

Secondly, a system should provide for your accountant a breakdown of the quantities you've sold, for how

LABEL YOUR DISKS WITH... The Disk Labeller

MISCELLANEOUS
SEC FREE-296 SEC USED-200 DOS 3.3
SORT FILE PAYROLL ACCOUNT RE
HI-RES GAM SPACE GAME DATABASE
FILESTRUCT CARD GAMES MAILING LI
COPY PROGR ACTION GAM MEMO LIST
DISK CHECK PADDLE GAM CHECKBOOK MASTER FIL

FEATURES:

- AUTOMATIC LABELLING
- COMPLETELY MENU DRIVEN
- INCLUDES 300 5" LABELS

REQUIRES:

- 64K APPLE II/II+/IIe*
or EQUIVALENTS
- DISK DRIVE • PRINTER

SPECIAL PRICE
\$59.95

SEND CHECK OR MONEY ORDER TO:

PRACTICAL SOFTWARE LTD.

P.O. Box 3000 Dept. IN Pomona, N.Y. 10970
Phone: 914-425-1158

ADD \$3.00 SHIPPING & HANDLING - N.Y. RESIDENTS PLEASE ADD SALES TAX
*APPLE II/II+/IIe ARE REGISTERED TRADEMARKS OF APPLE COMPUTER, INC.

APPLE CPM UTILITY PAK #2 \$39

Two of CP/MUG's most useful CP/M tools at a bargain price:

- A powerful and flexible 8080 DISASSEMBLER - binary file in, source file out!
 - An excellent DISK ZAP (inspect-and-change) utility - for any Apple disk-type device!
- UTILITY PAK #2 includes our own detailed user manual which provides in-depth tutorials on the art of disassembly and the mysteries of Apple CP/M file and diskette formats (recover erased files, blown diskettes, garbaged directories, etc.). You'd pay twice this price for each utility (without tutorials) elsewhere.

APPLE CPM UTILITY PAK #1 \$39

Nine CP/MUG utilities adapted and documented (40 pages!) specifically for Apple CP/M:

- Extended DIRECTORY (with file sizes and sort and attribute selection options)
- Multi-Diskette Volume CATALOGER
- BATCH CP/M commands on one line
- Conditional SUBMIT file processing
- LIST selected PARTS of a text file
- Single Drive File COPY
- COUNT text file lines
- Sort And Pack diskette directory
- LISTFILE (numbers & separates pages)

Pascal/CPM/DOS FILE TRANSFER UTILITIES \$45

Move your Pascal text files to CP/M or Pascal for editing, move DOS data to CP/M or Pascal for processing with high level languages, etc. FTU consists of six programs to transfer any file among the Apple DOS, CP/M, and Pascal operating system environments. Allows a single disc to hold files for all three systems.

CLOCKWARE \$25

Provides access from Pascal programs to all time and date setting and reading functions of Prometheus Versacard and other Thunder-type clock calendars in any slot (1-7). Includes SYSTEM. STARTUP programs to set the system date at bootup, demo programs, and a complete and informative user manual.

APPLE II ↔ IBM PC FILE TRANSFER SERVICE

Write for information and pricing

SEE YOUR DEALER OR ORDER DIRECTLY (VISA/MASTERCARD ACCEPTED) FROM:

RCM SOFTWARE

4608 Renwood Drive • Kettering, Ohio 45429

From Screen to Paper at the Touch of a Button

The new Apple* compatible printer interface card from Texprint literally unleashes your system's power for fast, easy printouts of any screen, at any time, with any program — in color and black & white.

Push the red button that comes with PRINT-IT! — Your program pauses instantly; touch RETURN and whatever is on your screen text, graphics or both, is printed in color or black & white.

Whether your Apple II, II+, IIe or "look-alike" is for business or pleasure, you'll want the ability to pause and take snapshots of your screen displays and then continue from exactly where you paused, all at the touch of a button — games, business data, menus, educational instructions, graphics — even CP/M**. PRINT-IT! will print your screen at any time no matter what program you're running, as well as perform every function you expect of an intelligent printer card.

PRINT-IT! supports:

- Graphics — Low, high and double high resolution
- Text — 40 column as well as Apple IIe and Videx*** 80 column cards
- Printers — All of the most popular printers, including color, are easily selected with a dip switch

At your local computer store PRINT-IT! retails for \$299. Now, for a limited time, you can purchase PRINT-IT! direct from the factory for just \$179.

For those whose budget can't accommodate the push button pause/print feature, Texprint's Model 2 (with most PRINT-IT! functions) is your best choice at a special introduction price of \$99 (Retail \$174).

PRINT-IT! is backed with a 30 day unconditional guarantee. Qualified educational and dealer discounts available.

* Apple Computer
** Digital Research
*** Videx, Inc.

TEXPRINT

To Order

Call Toll Free 1-800-255-1510



Add \$4 shipping and handling.
Mass res. add 5%

1. Sales. This field is for all sales.
2. Freight.
3. Sales tax.
4. Service charges. As noted, these must be added manually.
5. Miscellaneous debits. Anything that does not fall into one of the above categories.
6. Payments.
7. Credits. Rather than a cash receipt, you *credit* a customer's account.
8. Returned items.
9. Discounts allowed.
10. Miscellaneous credits.
11. Accounts receivable. The manual explains this as the "account numbers to which all debit and credit amounts will report for any receivables transactions."

Table 1. These are the 11 fields requiring information for posting to the general ledger.

much and so on.

Peachtree's Accounts Receivable program wants to be a full-blown accounting system. While it has its advantages, it also presents problems.

The 108-page tabbed manual begins with a flowchart explaining how the 13 application programs interact. Curiously, the manual banishes its tutorial section to the back, rather than placing it up front where it belongs. Also, there is no index.

You should work from copies of

the two program disks and sample data disk provided with the system. Unlike other Peachtree software, you won't have to add CP/M and MBasic onto your disks. Instead, boot CP/M to start, type MBasic to load it, and then load the program. This means you'll need the Microsoft Softcard, rather than anyone else's Z-80 card, since Peachtree's Accounts Receivable program is written in MBasic.

Somehow, the reports on the sample data disk don't match the

manual's printouts, so the people you read about don't exist on disk. Thus, you need a printout of the sample data disk before you can use it for practice.

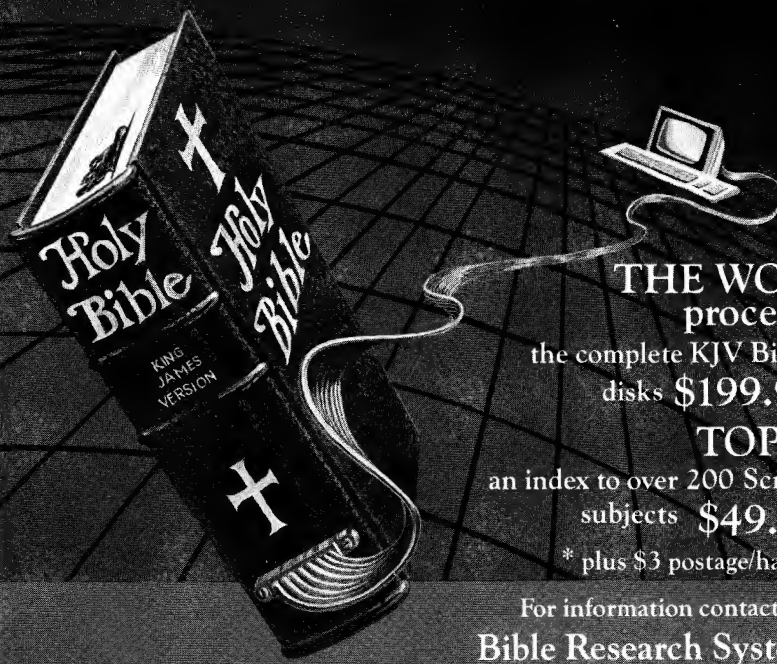
A system set-up program creates a blank data disk calling for your account codes so the program can interface with Peachtree's general ledger system. This convenience saves much posting time; once you've entered the information into your accounts receivable file, you can update your general ledger with a few keystrokes. Before you start, make sure the account codes in the accounts receivable and general ledger systems match up.

The system provides 11 separate accounting codes for distributing sales and income (see Table 1). For many businesses this is plenty—for others, not nearly enough.

For instance, if you lump every-

Circle 35 on Reader Service card.

New dimensions in Bible study.



THE WORD processor

the complete KJV Bible on disks **\$199.95 ***

TOPICS

an index to over 200 Scripture subjects **\$49.95 ***

* plus \$3 postage/handling

For information contact:

Bible Research Systems

P.O. Box 1389
Round Rock, TX 78680
(512) 835-7981

Requires APPLE II + , IBM PC and compatibles, TRS80, CP/M 2.2 (Z-80), KAYPRO, OSBORNE, COMMODORE 64.

"Software for personal Bible study."

Circle 335 on Reader Service card.



KIDS' CORNER

From KIDS' CORNER: quality educational software for young children.

MAGIC CRAYON Children draw, select colors and command the computer to re-draw their own pictures. Good introduction to computer use. **\$35**

LEARNING ABOUT NUMBERS Three programs use colorful, lively graphics to teach number skills.

- Let's Count
- Let's Tell Time
- Arithmetic Fun **\$40**

Send for free brochure.



C & C Software
5713 Kentford Circle
Wichita, KS 67220
(316) 683-6056

Software for 48K Apple II Plus and Apple II/e.
Apple is a registered trademark of Apple Computer Co.

VISA & MasterCard accepted

thing you sell into one category, it all gets posted to Sales. No sweat. But what if you sell materials, labor, resale items, contract work, outside services and leasing, and you need to keep track of them all? This system cannot do that for you. It just can't break down your sales sufficiently enough.

There's another problem. Each customer file has a spot for a tax rate. When you create invoices, the program computes the sales tax according to the rate you programmed. That's ideal if all your customers pay sales tax. But some may have resale accounts. Others might be tax-exempt. Some may be government agencies, who don't pay sales tax to themselves.

Also, in many states, labor is non-taxable. If you sell an adding machine you'll add sales tax, but if a year later you *repair* that same

machine, you won't charge tax. More often, customers pay sales tax only on selected kinds of work, according to individual state law.

With the Peachtree Accounts Receivable program, you either must enter a percent into the sales tax field or leave it blank and manually add the tax.

Invoicing

The system's invoicing program allows you a six-digit invoice number. You can enter them manually or just input the first invoice number and the program will increment them. The program performs automatic extensions for you, too. If you sell 22 of an item at \$10 each, the program totals them at \$220.00. And of course, the amount of the invoice automatically is posted to the customer and sales or credit accounts.

You can designate individual cus-

tomers as "automatic billing" accounts, meaning you'll send them an invoice for a previously specified amount each month. If you have regular customers, this is a terrific, time-saving feature.

When you print invoices, enter all shipping data including where to send the order, how to ship it, when it will ship, the order date, your order number, their order number and other information.

Evidently, the system's invoicing section is designed mainly for mail order companies. There are 12 fields you must contend with when you create an invoice, so unless you use most or all of them in your business, you'll waste time.

The number of customers and transactions on a disk must add up to about 900. If you have 100 customer accounts, that leaves room for about 800 transactions. If you have 250 cus-

Circle 108 on Reader Service card.

DIVERSI-DOS IS THE BEST

*** NEW *** NEW *** NEW ***

TLIST — Lists BASIC files without destroying the program in memory. Use TLIST to copy lines from one program to another / Improved list format without indents, for easier editing / Visible control characters Also lists program in memory with improved format

Insert/Delete Mode — Makes program editing a pleasure! Insert characters in the middle of a line without re-typing. Also works for data entry!

Keyboard MACROS — Enter whole phrases with a single keystroke! Make your own custom editing keys, or redefine your entire keyboard (Dvorak keyboard included)

Wildcard file names — Enter only the first few letters of a file name (searches the directory for a match)

BSAVE — "A" and "L" parameters are not necessary (uses "A" and "L" from last BLOAD) Recognizable ESCAPE and INSERT mode cursors Lowercase DOS commands accepted Catalog abort key

Lists text files to screen or printer

"Of all the DOS enhancement packages reviewed in Peeling II to date, **DIVERSI-DOS** is the most powerful in terms of its capabilities coupled with its price. **DIVERSI-DOS** is the only product to speed up all areas of DOS—LOAD/BLOAD, RUN/BRUN, SAVE/BSAVE, as well as the READ and WRITE of text files...The documentation is superb. (Rating AA)" — Peeling II Magazine

WHAT ARE YOU WAITING FOR???

Are you tired of waiting for DOS to load and save files? Are you tired of waiting for DOS to finish so you can type again? Are you tired of waiting for your printer? When you buy **DIVERSI-DOS™**, by Bill Basham, you won't have to wait any more! Here's why:

1. **DOS speed-up:** Apple DOS 3.3 takes 18 disk revolutions to read a single track, whereas **DIVERSI-DOS** reads or writes a track in just 2 revolutions. This speeds up file processing tremendously (see table).
2. **Keyboard Buffer:** **DIVERSI-DOS** allows you to type ahead, as fast as you can, without missing a single character.
3. **Print Buffer:** **DIVERSI-DOS** can use a RAM card (16K-128K) to temporarily save characters before they are printed. Thus, your computer won't have to wait for your printer to finish.
4. **DDMOVER:** **DIVERSI-DOS** can now be moved to a RAM card to increase the available memory in a BASIC program.

DIVERSI-DOS, the QUADRUPLE utility, requires a 48K Apple II, II+ or //e with DOS 3.3. A simple, menu-driven installation program is included on the un-protected disk. So what are you waiting for?

	APPLE DOS	DIVERSI-DOS
SAVE†	27.1 sec.	5.9 sec.
LOAD†	19.2 sec.	4.5 sec.
BSAVE*	13.6 sec.	4.1 sec.
BLOAD*	9.5 sec.	2.6 sec.
READ**	42.2 sec.	12.4 sec.
WRITE**	44.6 sec.	14.9 sec.
APPEND**	21.3 sec.	2.3 sec.

*Hi-res screen † 80-sector BASIC program
** 52-sector text file

ORDER TOLL-FREE

Call NOW: 800 835-2246 ext. 127 (orders only)
For information, call 815 877-1343
Disks normally shipped within 24 hours.
Only \$30: Includes 1st class or foreign airmail.
Sold by mail order only.
Return in 30 days for full refund, if not totally satisfied!

FREE — with your order — **FREE DOGFIGHT® II** — By Bill Basham
— A special mail-order version of the arcade game for 1 to 8 players, recently listed #6 on the best seller list!

Send \$30 (U.S. funds) to:
Diversified Software Research, Inc.
5848 Crampton Court
Rockford, Illinois 61111



Name: _____

Address: _____

City: _____

State: _____ Zip Code: _____

Visa Mastercard, C.O.D. or personal check accepted.

Card #: _____

Exp. Date: _____

C

1. Load a normal Apple disk and turn the system on.
2. Turn on your printer (it must be in slot 1 to work with this program).
3. Type PR#1. This initializes the printer. It will respond by moving the paper up a line.
4. Type PRINT CHR\$(15). This is the code your Epson will understand for compressed print. It will print on the paper, but doesn't hurt anything. You must then leave your printer on; if you turn it off it will revert to its default (larger) character size.
5. Insert your CP/M disk and type PR#6 to load CP/M.
6. Type MBASIC to load it into your Apple.
7. Put the Accounts Receivable program disk into drive A (#1) and its data disk into drive B (#2).
8. Type RUN "AR MENU" to start the Accounts Receivable program.

Table 2. This is the sequence required to tell your Epson MX-80 printer to print in the compressed character mode, so 132 characters will fit across your page. This will help you get started with Peachtree's Accounts Receivable program.

tomer accounts, you can have about 650 transactions per month. In any case, you're allowed a maximum of 500 customer accounts per disk.

You cannot move from disk to disk to gather reports. You could have customers' names from A-F on one disk, G-N on the next, and so on, but if one day you have more customers than one disk's worth, you'll have to consolidate all the summary data by hand.

The program has flexible customer information sections. You can designate a customer as a regular account, allowing any unpaid transactions during the current month to be carried forward to the next, or a balance forward account, which moves only the ending balance forward.

You're allotted 24 characters for your customer's name, 24 for their address, and 24 for their city, state, and zip code. Plus, each customer account number is a six-digit alphanumeric code.

The program also has powerful credit functions. You can apply payments to specific invoices as well as consolidate them. That means if you have the same invoice number for both a charge and a credit, you can instruct the program to "wash out" both transactions to make more room.

There's another problem. Peachtree's Accounts Receivable program was written BFC—Before Finance Charges. You can add interest charges to statements manually, one account at a time, but the system *cannot* scan

all your accounts and add a finance charge to those past due. It's inconceivable that a modern-day accounting system would not have this capability.

Aging Gracefully

You can print two kinds of aging reports. The first contains names and amounts, with the dollars in columns to show how old the accounts are. The other, called "detail aging," gives the basic information and adds all open invoice numbers. In either case, you select the date to start the aging process.

The customer files track items like year to date charges and credits, the last payment date and the amount of the last purchase. Each transaction has a "summary" line to indicate what the invoice is for.

The program prints all customer accounts alphabetically. You can print up to 75-word messages on your statement to all customers, all automatic billing customers, or just one individual account. The system, though, even prints statements for accounts with a credit balance.

The system allows you to delete transactions, but doing so will foul up audits. It's better from an accounting standpoint to enter a reverse transaction (cancelling the first one), and then to input the correct amount(s). This program will *not* allow deletions for any transaction already posted to the general ledger.

For system reports you need a 132-column printer interfaced to Slot 1

inside your Apple. We tried the system with a Centronics 779, and after reducing the character size it worked fine. If you have an Epson MX-80 F/T, it must be programmed to print in its compressed character mode. The routine outlined in Table 2 will do the trick.

No matter what kind of printer you own, be sure to use it with the system before you buy.

Number Please

The Peachtree allots a field for a phone number, but you must enter it without any dashes (6024453212). While the system eventually aligns it for you (602-445-3212), the Customer Maintenance selection still displays it as 6024453212.

Also, when you look at an account through the Display Customer Status program selection, part of the name and number run together. Here's an example:

ALLEN & COMPANY (404)255-99994436
ROSWELL RD. NE.

Warning: Don't press reset! If you do, turn off your Apple and restart with your CP/M disk in Drive 1.

Once a particular function is complete, the program insists that you press return to prompt the main menu, rather than going there itself.

These aren't major problems, but they affirm that an update would improve the program.

Peachtree's Accounts Receivable program could perform well for your business. You must have the particular hardware (64K, Microsoft Softcard, 132-column printer, two disk drives) to run the system. Remember, this accounts receivable program can interface with a general ledger system, saving data-entry time while always posting things properly. (Peachtree's General Ledger, by the way, is top-notch.) In short, this program is worthwhile if you have the hardware and can cope with its limitations. It's available for \$400 from Peachtree Software, 3445 Peachtree Road N.E., Atlanta, GA 30326. ■

Greg Glau
Prescott, AZ

The House-Ware Genies

- ★ The Mail Genie
- ★ The Pantry Genie
- ★ The Recipe Genie
- ★ The Calendar Genie
- ★ The Insurance Genie

At last, the Turn-Key Programs that allow Dad to influence Mom that an Apple™ Computer is a modern day necessity.

Introductory Price \$29.95 each

Developed By
SOUTHERN CENTER
FOR RESEARCH & INNOVATION
P.O. Box 1713
Hattiesburg, MS 39403
TELEPHONE 601-545-1680
TELEX 585400 SCRI US HATI
CABLE SCRI US

Dealer Inquiries Invited

Circle 367 on Reader Service card.

wabash®
six-year warranted

DISKETTES!
\$18.95/box (10)
with FREE library case!

5 1/4" single-side, single-density; double-density add \$2/box. 8" disks comparably priced. Add \$2 per order shipping. In Illinois add 6% sales tax. Immediate shipment on VISA, Master Card or Money Order; Add 14 days for personal checks.

CALL TOLL FREE
(800) 222-1248

In Illinois Call (312) 882-8315
DEALERS! SCHOOLS! USER GROUPS!
Call for our low volume discount prices!

DIGITAL IMAGES
Box 941005, Schaumburg IL 60194

Circle 356 on Reader Service card.

We Will BEAT Any Advertised Price or You Receive a FREE Gift!

maxell

REG. PRICE 5 1/4" 28.95 55/00 SOFT SECTOR

5 1/4" 39.50 05/00 SOFT SECTOR

SPECIAL

VERBATIM 5.55/00 SOFT SECT. 23.95

MEMOREX 4.95/00 SOFT SECT. 23.95

3M SCOTCH 5.55/00 SOFT SECT. 22.95

Add \$2.00 Handling in USA

VISA C.O.D. MasterCard

5% Tax in Fla. Only
APO/Box No's & Canada
Add \$3.50 Shipping

MEGA O. BYTE

4693 S.W. 45th Street
Ft. Lauderdale, Florida 33314
305-587-1130

1-800-327-1019

Buy 2 to 4 Boxes
Get a Library Case With Ea. Box Free

10% OFF REG. PRICE \$4.00 VALUE

Buy 5 to 9 Boxes
Get a Plastic Storage Flip n File Box (holds 75 Mini-Disks) Free

15% OFF REG. PRICE \$3.50 VALUE

Buy 10 Boxes
Get a Complete Computer Maintenance Kit Free

25% OFF REG. PRICE \$4.50 VALUE

Circle 433 on Reader Service card.

"It walks you thru"
BALACCOUNT™

A powerful, fully supported accounting program for Home, Business, Classroom includes:

DIRECTORY • JOURNAL • LEDGER

- Precise, easy-to-follow, step by step instructions displayed
- self editing
- Available for Apple-II*, TRS80* IBM-PC
- Realistically priced at prepaid postage for U.S. addresses

\$34.95

To order: call or write
Balmoral Inc.
12 Marlin Rd., West Roxbury, MA 02132
Phone: (617) 323-8073

FREE BROCHURE

*TRS 80 is a trademark of Tandy Corp.
*IBM-PC is a trademark of IBM Corp.
*Apple-II is a trademark of Apple Corp.

Balmoral™

Circle 16 on Reader Service card.

We Help Bring Your Family Together

6 Types of Charts and Sheets
Indices
User Fields
Notes, Footnotes and Sources
No Limits
Adapts to Your Hardware
Comprehensive
Easy to Use

And Much, Much More

Send for brochure and sample printouts.

Family Roots includes detailed manual and 2 full diskettes of programs for your Apple II* or IBM PC.**

Other genealogy software also available.

Price: \$185 plus \$3.50 Postage

American Express, Visa & Mastercard Accepted



* TM Apple Computer, Inc.
** TM International Business Machines

QUINSEPT, INC.

P.O. Box 216, Lexington, MA 02173
(617) 862-0404

Circle 284 on Reader Service card.

THE BYTE GENERAL

3 Sierks Lane
Roslyn Harbor, NY 11576

24 Hour Order Line

Order: **516-625-0920**

Technical: **516-338-4083**

FREE SHIPPING IN THE U.S.A.

Diskettes:

Elephant #1 SS/SD Soft. . . . \$15.95
Elephant #2 SS/DD Soft. . . . \$18.95

Apple Computer:

Apple IIe Starter System . . \$1495.00

Includes:

Apple IIe 64k, Drive/Controller
Apple IIe Monitor w/Tilt Screen
80 Column Card, Tutorial Disk
Monitor Stand

Modems:

NEW! Micromodem IIe

w/Term. \$239.95
Smartmodem 300 Baud . . . \$199.95
Smartmodem 1200 Baud . . \$479.95
J-Cat Modem \$100.00
Applecat II \$249.95

Printers:

Prowriter 8510ap \$345.00
Gemini 10X. \$279.00
Okidata #92XL. \$425.00
Prowriter Ribbons \$7.00

Disk Drives:

Elite 1 Disk Drive (Apple) . . \$254.95
Pace AP-100c Slimline . . . \$229.00

Apple Compatible Cards:

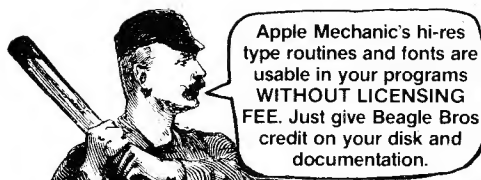
MPC Parallel Printer
Card w/Cable. \$55.00
MPC 64k 80 Column Card IIe \$109.00
CCS Serial Card \$109.00
Kensington System Saver Fan \$65.00
Wildcard Copy Device \$92.00
Leading Edge Green
Gorilla Monitor. \$89.00
CPM Card \$289.95
Z Card II \$119.95
Ultraterm (160 Col. Card) . . \$250.00
Videoterm (80 Col. Card) . . \$189.95
Videoterm Combo Pack . . . \$209.95
Kraft Joystick. \$34.95

**Look Around, Find The Best Prices
And The General Will Beat Them.**

Dealer Inquiries Invited

TERMS OF SALE: There is a 3% Service Charge for Mastercard or Visa. Orders Under \$30 please add 2 shipping and handling. Personal checks require two weeks for clearance. Prices subject to change without notice.

TRS-80 is a Tandy trademark. Apple is a registered trademark of Apple, Inc.



Apple Mechanic's hi-res type routines and fonts are usable in your programs **WITHOUT LICENSING FEE.** Just give Beagle Bros credit on your disk and documentation.

APPLE MECHANIC

HI-RES SHAPE EDITOR / TYPE FONT DISK
by BERT KERSEY

\$29.50: Includes Peeks/Pokes Chart & Tip Book #5.

SHAPE EDITOR: Keyboard-draw hi-res shapes for animation in your Applesoft programs. Access & create **proportionally-spaced hi-res Typefaces** with each character re-definable as you want. Six fonts are included on the disk. Excellent LISTable Applesoft demos show you how to animate graphics and create professional-looking Charts and Graphs.

BYTE-ZAP: Rewrite any byte on a disk for repair or alteration. Load entire sectors on the screen for inspection. **Hex/Dec/Ascii displays** and input. Educational experiments included for making trick file names, restoring deleted files, changing DOS, etc.

MORE: Useful music, text and hi-res tricks for your programs. Clear educational documentation.

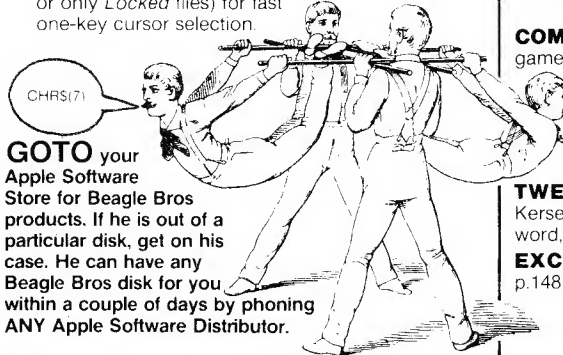
APPLE MECHANIC TYPEFACES

by BERT KERSEY

\$20.00: Includes Peeks & Pokes Chart.

26 NEW FONTS for use with Apple Mechanic programs. Many different sizes and typestyles, both ordinary and **Artistic**. Every character—from A to Z to “*” to “□”—of every typeface—from “Ace” to “Zooloo”—is re-definable to suit your needs. All typefaces are **proportionally spaced** for a more professional appearance. People do notice the difference!

BEAGLE MENU: Display only the file names you want from your disks (for example, only Applesoft or only Locked files) for fast one-key cursor selection.



GOTO your Apple Software Store for Beagle Bros products. If he is out of a particular disk, get on his case. He can have any Beagle Bros disk for you within a couple of days by phoning ANY Apple Software Distributor.

RUSH the following disks by First Class Mail—

- | | |
|--|--|
| <input type="checkbox"/> Alpha Plot \$39.50 | <input type="checkbox"/> Frame-Up \$29.50 |
| <input type="checkbox"/> Apple Mechanic 29.50 | <input type="checkbox"/> GPLE 49.95 |
| <input type="checkbox"/> A.M.Typefaces 20.00 | <input type="checkbox"/> ProntoDOS 29.50 |
| <input type="checkbox"/> Beagle Bag 29.50 | <input type="checkbox"/> Silicon Salad 24.95 |
| <input type="checkbox"/> Beagle BASIC 34.95 | <input type="checkbox"/> Tip Disk #1 20.00 |
| <input type="checkbox"/> DiskQuik 29.50 | <input type="checkbox"/> Utility City 29.50 |
| <input type="checkbox"/> DOS Boss 24.00 | <input type="checkbox"/> |
| <input type="checkbox"/> Double-Take 34.95 | <input type="checkbox"/> ADD ME to mailing list. |
| <input type="checkbox"/> Flex Type 29.50 | <input type="checkbox"/> ALREADY ON mail list. |

AT YOUR APPLE DEALER NOW!
Or order directly from Beagle Bros—



Visa/MasterCard or COD, call **TOLL-FREE**

Orders only / ALL 50 STATES / 24 Hours a Day
1-800-227-3800 ext. 1607

OR mail U.S. Check, Money-Order or Visa/MC#

to **BEAGLE BROS**, 8th Floor

4315 SIERRA VISTA, SAN DIEGO, CA 92103

Add \$1.50 First Class Shipping, Any-Size Order

Overseas add \$4.00 COD add \$3.00 California add 6%

ALL ORDERS SHIPPED IMMEDIATELY.

DOS BOSS

DISK COMMAND EDITOR

by BERT KERSEY and JACK CASSIDY

\$24.00: Includes Peeks/Pokes Chart & Tip Book #2.

RENAME DOS COMMANDS & Error Messages—“Catalog” can be “Cat”; “Syntax Error” can be “Oops” or almost anything you want it to be.

PROTECT YOUR PROGRAMS. An unauthorized Save-attempt can produce a “Not Copyable” message, or any message you want. Also easy List-Prevention and other useful Apple tips and tricks. Plus one-key program-execution from catalog.

CUSTOMIZE DOS. Change the catalog Disk Volume heading to your message or title. Omit or alter catalog file codes. Fascinating documentation, tips and educational Apple experiments.

ANYONE USING YOUR DISKS (booted or not) will be using DOS the way YOU designed it.



10 LIST: LIST: LIST: FOR ZZ: PEEK(175)+PEEK
(176)*256+36 TO 3072: POKE ZZ,216: NEXT
20 FOR XXX 1 TO 2: POKE-16299,0: POKE
-16300,0: XXX-1: NEXT: REM Experiment
with different length variable names.

BEAGLE BAG

12 APPLE GAMES ON ONE DISK
by BERT KERSEY

\$29.50: Includes Peeks & Pokes Chart
COMPARE BEAGLE BAG with any single-game Locked-Up disk on the market today.

All 12 games are a blast, the price is a bargain, the instructions are crystal clear, and the disk is COPYABLE. You can even change the programs or list them to learn programming tricks by seeing how they work.

TWELVE GAMES from the Applesoft Ace, Bert Kersey— TextTrain, Wowzo, Magic Pack, Buzzword, Slippery Digits, and many many more...

EXCELLENT REVIEWS—See Jan-83 *Softalk*, p. 148. Beagle Menu too: see Typefaces description.



Beagle Bros
Micro Software Inc.

4315 SIERRA VISTA / SAN DIEGO, CA 92103
619-296-6400

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE AND COMPATIBLE WITH APPLE II, II+ AND IIe.*
(Don't Settle for Less!)

*DISKQUIK requires Apple IIe.

“APPLE” is a Registered Trade Mark of You-Know-Who.

NEW! SILICON SALAD

INCLUDING TIP DISK #2

by BERT KERSEY and MARK SIMONSEN

\$24.95: Includes Peeks/Pokes AND Commands Charts

MANY MINI-UTILITIES: Disk Scanner finds bad disk sectors, **Key-Clicker** adds subtle sound as you type, **DOS-Killer** adds two tracks of space to your disks, **2-Track Cat** allows up to 210 file names per disk, **Program Splitter** makes room for hi-res pix with large Applesoft programs, **Text Imprinter** transfers text to the hi-res screen, **Onerr Tell Me** prints the appropriate error message but continues program execution, **Text Screen Formatter** converts text layouts into Print statements... plus much more Apple wizardry from the boys at Beagle Bros.

MORE TIPS ON DISK: Including fantastic programming tricks from Beagle Bros Tip Books 5, 6 and 7, plus programs from Tips/Tricks Chart #1.

TWO-LINERS TOO: From our customers around the world—and elsewhere. Little mind-blowers that will teach your old Apple some new tricks!

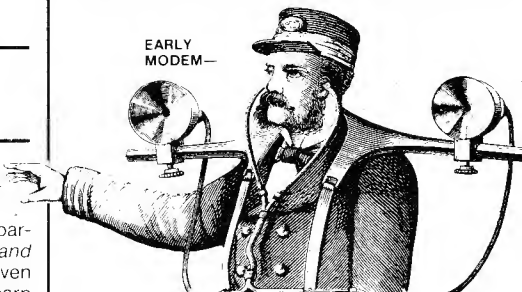
TIP DISK #1

100 TIP BOOK TIPS ON DISK
by BERT KERSEY

\$20.00: Includes Peeks & Pokes Chart.

100 LISTABLE PROGRAMS from Beagle Bros Tip Books 1-4. Make your Apple do things it's never done! All 100 programs are LISTable and changeable for Apple experimentation.

COMMAND CHART INCLUDED: Free with each Tip Disk; an 11 x 17 poster of all Applesoft, Integer Basic & DOS Commands with Descriptions!



FLEX TYPE

(FORMERLY “FLEX TEXT”)

VARIABLE-WIDTH HI-RES TEXT UTILITY
by MARK SIMONSEN

\$29.50: Includes Peeks & Pokes Chart

PRINT VARIABLE-WIDTH TEXT on both hi-res screens with normal Applesoft commands (including HTAB 1-70). Normal, expanded & compressed text with no extra hardware. (70-column text requires a monochrome monitor, not a tv).

ADD GRAPHICS TO TEXT or add Text to hi-res graphics. Run your existing Applesoft programs under Flex Type control. Fast, easy to use, and Compatible with GPLE and Double-Take.

DOS TOOL KIT* font compatibility, or use the supplied Flex Type typefaces. Select up to 9 fonts with control-key commands. A text character editor lets you redesign any Apple text character.

FRAME-UP

FAST APPLE DISPLAY UTILITY
by TOM WEISHAAR

\$29.50: Includes Peeks & Pokes Chart

PROFESSIONAL PRESENTATIONS: Turn your existing Hi-Res, Lo-Res and Text frames into attractive Apple “slide shows”. FAST hi-res loads in 2½-seconds! Paddle or Keyboard-advance frames.

UNATTENDED SHOWS are optional, with each picture arranged and pre-programmed to display on the screen from 1 to 99 seconds. Custom **Text Screen Editor** lets you create black-and-white text “slides” and add type “live” from the keyboard during shows. Mail copies of presentations on disk to your friends and associates (or home to Mom!).

NEW! GPLE

GLOBAL PROGRAM LINE EDITOR
by NEIL KONZEN

\$49.95: Includes Peeks/Pokes Chart & Tip Book #7.

A CLASSIC APPLE PROGRAM EDITOR
GPLE lets you edit Applesoft program lines FAST without awkward cursor-tracing and "escape editing".

INSERT & DELETE: GPLE works like a word processor for Applesoft program lines. You make changes instantly by jumping the cursor to the change point and inserting or deleting text. No need to trace to the end of a line before hitting Return.

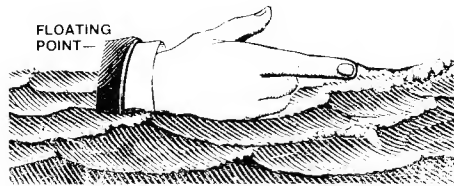
GLOBAL SEARCH & REPLACE: Find any word or variable in your programs, FAST. For example, find all lines containing a GOSUB, or edit or delete all lines with REM statements, or all occurrences of any variable. **Replace any variable,** word or character with any other. For example, change all X's to ABC's, or all "Horse" strings to "Cow".

80-COLUMN COMPATIBILITY: All edit & global features support Apple IIe 80-column cards and most 80-column cards on any Apple IIe, II+ or II.

DEFINABLE ESC FUNCTIONS: Define ESC plus any key to perform any task. For example, **ESC-1** can catalog drive 1. **ESC-L** can do a "HOME LIST". **ESC-N** could type an entire subroutine... Anything you want, whenever you want.

GPLE DOS MOVER: Move DOS and GPLE to Language Card (or IIe upper 16K) for an EXTRA 10,000 Bytes (10K) of programmable memory.

Plus APPLE TIP BOOK #7: Learn more about your Apple! Includes all new GPLE tips and tricks.



UTILITY CITY

21 PROGRAMMING UTILITIES
by BERT KERSEY

\$29.50: Includes Peeks/Pokes Chart & Tip Book #3

LIST FORMATTER prints each program statement on a new line. Loops indented with printer Page Breaks. A great Applesoft program de-bugger.

MULTI-COLUMN CATALOGS, with or without sector and file codes. Organize your disk library.

INVISIBLE and trick catalog file names. Invisible functioning commands in Applesoft programs too.

MUCH MORE: 21 utilities, including auto-post Run-number & Date in programs, alphabetize/store info on disk, convert dec to hex or int to FP, protect and append programs, dump text to printer...

LEARN PROGRAMMING: List-able programs and informative documentation. Includes Tip Book #3. Hours of good reading & Applesoft experiments.

ALPHA PLOT

HI-RES GRAPHICS TEXT UTILITY
by BERT KERSEY and JACK CASSIDY

\$39.50: Includes Peeks/Pokes Chart & Tip Book #4.

DRAW IN HI-RES on both Apple "pages" using easy keyboard commands OR paddles/joystick. Pre-view lines before plotting. Solid or mixed colors & Reverse (background-opposite) drawing. FAST one-keystroke circles, boxes & ellipses, filled or outlined. Add text for graphs & charts. All pix Save-able to disk, to be called from your Applesoft programs.

COMPRESS HI-RES DATA to 1/3 disk space (average) allowing more hi-res pictures per disk.

MANIPULATE IMAGES: Superimpose any two images, or RE-LOCATE any rectangular section of any drawing anywhere on either hi-res page.

HI-RES TYPE: Add text to your pictures with adjustable character-size and large-character color. Type anywhere with no Htab/Vtab limits. Type sideways too, for graphs. Includes Tip Book #4.



Beagle Bros

Micro Software Inc.

4315 SIERRA VISTA / SAN DIEGO, CA 92103
619-296-6400

ALL BEAGLE DISKS ARE UNLOCKED, COPYABLE AND COMPATIBLE WITH APPLE II, II+ AND IIe.*

(Don't Settle for Less!)

* DISKQUIK requires Apple IIe.
"APPLE" is a Registered Trade Mark of You-Know-Who.

BEAGLE BASIC

APPLESOFT ENHANCER
by MARK SIMONSEN

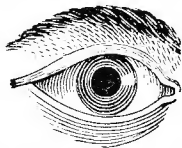
\$34.95: Includes Peeks/Pokes Chart & Tip Book #6.
Requires Apple IIe (OR II/II+ with RAM Card).

RENAME ANY APPLESOFT COMMAND or Error Message to anything you want. For program clarification, encryption/protection or even foreign translation. Plus add optional NEW COMMANDS:

ELSE follows If-Then statements, like this:
IF X=2 THEN PRINT "YES"; ELSE PRINT "NO"

HSCRN reads color of any hi-res dot for collision testing. **SWAP X,Y** exchanges 2 variables' values. New **TONE** command writes music with no messy pokes & calls. **SCRL** scrolls text in either direction. **TEXT2** lets Text Page 2 act exactly like Page 1.

PLUS: GOTO & GOSUB may precede variables, as in "GOSUB FIX" or "GOTO 4+X". Escape-mode indicated by special ESC CURSOR. Replace awkward Graphics screen-switch pokes with 1-word commands. Change ctrl-G Beep to any tone. **INVERSE REMS** too! All GPLE compatible.



1 FOR S-768 TO 773: READ A:
POKE S,A: NEXT: POKE 232,0:
POKE 233,3: DATA 1,0,4,0,5,0
2 HGR2: FOR R=0 TO 192: ROT=R:
SCALE 96: XDRAW 1 AT 140,95:
SCALE 30: XDRAW 1 AT 140,95:
S-PEEK(49200): NEXT: RUN

PRONTO-DOS

HIGH-SPEED DOS / DOS-MOVE UTILITY
by TOM WEISHAAR

\$29.50: Includes Peeks & Pokes Chart

TRIPLES THE SPEED of disk access and frees 10,000 bytes of extra memory by moving DOS.

Function	Normal	Pronto
BLOAD HI-RES IMAGE	10 sec.	3 sec.
LOAD 60-SECTOR PROGRAM	16 sec.	4 sec.
SAVE 60-SECTOR PROGRAM	24 sec.	9 sec.
BLOAD LANGUAGE CARD	13 sec.	4 sec.

(Text Files: No Change)

Boot the Pronto disk or your updated disks, created with the normal INIT command. Compatible with all DOS Commands, GPLE, Double-Take, DOS Boss, DiskQuik and almost all unprotected programs.

MOVE DOS to your Language Card, RAM Card, or standard Apple IIe upper 16K, freeing up 10,000 EXTRA BYTES of memory for your programs.

15 EXTRA SECTORS per disk. Catalog Free-Space displayed every time you catalog a disk.

TYPE-COMMAND ("TYPE filename") prints contents of sequential Text Files on screen or printer.

NEW!

DISKQUIK

DISK DRIVE EMULATOR
by HARRY BRUCE and GENE HITE

\$29.50: Includes Peeks & Pokes Chart

Requires Apple IIe with Extended 80-column Card.

ACTS LIKE A DISK DRIVE in Slot 3, but much faster, quieter, more reliable and \$350+ cheaper! Enjoy the benefits of a 2nd (or 3rd or 4th...) drive at less than 1/10th the price. Catalogs normally with "CATALOG, S3" command. Load & Save any kind of files into RAM with normal DOS commands.

SILENT AND FAST: Since no moving parts are involved, DiskQuik operates silently and at super-high speeds. See it to believe it. Your Apple IIe's Extended 80-column Card (required) can hold about half the amount of data as a 5 1/4" floppy disk!

MANY USES: For example, auto-load often-used files like FID etc., etc., into RAM when you boot up, so they are always available when you need them. Copy files from RAM onto disk and vice versa, just as if a disk drive were connected to slot #3.

FRIENDLY & COMPATIBLE with 80-column display, GPLE, ProntoDOS, and all normal Applesoft and DOS commands and procedures. Will not interfere with Apple IIe "Double Hi-Res" graphics.

GOTO any Software Store for Beagle Bros. If they are out of a particular disk, remember to get on the stick, and call Beagle Bros. (619-296-6400) or write to Beagle Bros. (4315 Sierra Vista, San Diego, CA 92103). Distributors: Every computer store carries our disks. Write to Uncle Lou for more information. Floppies will be everywhere.

DOUBLE-TAKE

2-WAY-SCROLL/MULTIPLE UTILITY
by MARK SIMONSEN

\$34.95: Includes Peeks/Pokes AND Tips/Tricks Charts.

2-WAY SCROLLING: Listings & Catalogs scroll Up AND Down, making file names and program lines much easier to access. Change the Catalog or List scroll-direction at will, with Apple's Arrow keys.

80-COLUMN COMPATIBLE: All features support IIe and most other 80-column cards.

BETTER LIST FORMAT: Each program statement lists on a new line for FAST program tracing & de-bugging. Printer-compatible; any column-width.

VARIABLE-DISPLAY: Displays all of a program's strings and variables with current values.

CROSS-REFERENCE: Sorts and displays line numbers where each variable & string appears.

AUTO-LINE-NUMBER: Hex/Dec Converter, better Renumber/Append, Program Stats, Change Cursor, Space-On-Disk. GPLE/Pronto compatible.

<input type="checkbox"/> Alpha Plot	\$39.50	<input type="checkbox"/> Frame-Up	\$29.50
<input type="checkbox"/> Apple Mechanic	29.50	<input type="checkbox"/> GPLE	49.95
<input type="checkbox"/> A.M. Typefaces	20.00	<input type="checkbox"/> ProntoDOS	29.50
<input type="checkbox"/> Beagle Bag	29.50	<input type="checkbox"/> Silicon Salad	24.95
<input type="checkbox"/> Beagle BASIC	34.95	<input type="checkbox"/> Tip Disk #1	20.00
<input type="checkbox"/> DiskQuik	29.50	<input type="checkbox"/> Utility City	29.50
<input type="checkbox"/> DOS Boss	24.00		
<input type="checkbox"/> Double-Take	34.95	<input type="checkbox"/> ADD ME to mailing list	
<input type="checkbox"/> Flex Type	29.50	<input type="checkbox"/> ALREADY ON mail list	

AT YOUR APPLE DEALER NOW!
Or order directly from Beagle Bros—



Visa/MasterCard or COD, call **TOLL-FREE**
Orders only / ALL 50 STATES / 24 Hours a Day
1-800-227-3800 ext. 1607

OR mail U.S. Check, Money-Order or Visa/MC#
to **BEAGLE BROS.**, 7th Floor
4315 SIERRA VISTA, SAN DIEGO, CA 92103

Add \$1.50 First Class Shipping, Any-Size Order
Overseas add \$4.00. COD add \$3.00. California add 6%
ALL ORDERS SHIPPED IMMEDIATELY.

Book Reviews

The Survival Kit for Apple Computer Games

by Ray Spangenburg and Diane Moser

Wadsworth Electronic Publishing Co.
10 Davis Drive
Belmont, CA 94002

Softcover, \$9.95

If you have a library of classic (or at least old) Apple games but can't get past the first screen of any, you might find *The Survival Kit for Apple Computer Games* a help, if you can overcome two reservations. The first is the inescapable feeling that this is simply another cash-in/rip-off book like the *Thrashing Pac-Man* paperbacks of a few years ago. The second is the authors' occasionally fatal case of the cutes.

For those hopelessly stuck in Zork I or misled by Microwave's documentation (Teddy the Salvage Man need not avoid the beams that fry aliens), the *Survival Kit* fulfills its small mission. Spangenburg and Moser give brief tours of 24 adventure, arcade, fantasy and strategy games, mentioning system requirements—II or II+; the IIe, like many popular games, was too new to be included—as well as publisher's address, price (buried in an appendix) and whether the game needs color or is okay in black-and-white.

In addition, each game gets a "prologue," a winsome, ad-like narrative description, followed by a "re-connaissance report" from the authors and "advice from the vets"—veteran players, not veterinarians.

Spangenburg and Moser are effervescently enthusiastic at offering tips for dodging Sneakers, and their adventure hints are helpful if unsubtle ("Think of Horace Greeley [here]"). They seem less at ease advising Sargon II chess players ("Concentrate ... Think ahead ... Hemingway described courage as 'grace under pressure'").

The book's worst fault, though, is its choice of games. While the au-

thors say they "tried to include some of the hottest new entries on the market and some of the classics," you won't find Choplifter or Aztec, let alone newer hits. Instead, there are comparative antiques like Jawbreaker, The Wizard and the Princess, and Crush, Crumble, and Chomp!

Rating their 24 games on a four-point scale, the authors gave only Deadline and Wizardry 4's and Snake Byte and Cross Fire 3.5's. By contrast, 11 programs rated only 2 or 1.5. If Spangenburg and Moser, for all their bubbly prose, can't get excited about half the games they played, it's hard to get excited about their book. ■

Eric Grevstad
Peterborough, NH

The Complete Handbook of Personal Computer Communications: Everything You Need to Go Online with the World

by Alfred Glossbrenner

St. Martin's Press
175 Fifth Ave.
New York, NY 10010

Softcover, \$14.95

If there's a modem in your future, you'll want to be sure to read this new book. Even if you've already logged many hours on The Source or CompuServe, you may not be aware of all the other information that you might be able to use. In any event, *The Complete Handbook of Personal Computer Communications* is the first book that details just about everything available and how to get it.

The author begins with a two-chapter overview of the subject. He briefly sketches each kind of database, then tells what hardware and software you'll need. He gives specific facts as well as alternatives. (Note: *I would have found the chapter on using Telenet and Tymnet [the systems that allow you to use local phone numbers instead of long distance ones to access a database] more*

useful here than in the Appendix.) Next, he describes each of the major information utilities and databases—The Source, CompuServe, Dow Jones News/Retrieval Service, etc.—in great detail by devoting an entire chapter to each one.

All chapters are liberally sprinkled with boxed-off *Online Tips*. Each tip contains some bit of information that isn't crucial for your understanding, but handy to know. Each chapter is loaded with incredible amounts of information, from addresses and phone numbers to sessions on moving around the particular utility. For example, I accessed The Source without either its manual (I was using a friend's access codes) or the manual for the transmittal software. I easily found and printed out a list of all the flights from Chicago to Tampa Bay. Frankly, I'd never even used our modem before that.

Now, Mr. Glossbrenner doesn't stop with the major databases. He also includes chapters on Computer Bulletin Board Systems; Electronic Shopping, Banking, and Barter; Computerized Conferencing; and what he calls "telecommuting"—that is, working at home and sending your work to an employer via telephone lines. He finishes with a chapter on technical information. His appendices include a troubleshooting checklist, sending Mailgrams or a Telex, and such esoteric topics as using your desktop computer as a typesetter. He even puts the most important commands for the three major information utilities in a Quick Reference Command appendix. And there's also a very good index.

Unfortunately, you'll have to pay a price to get to all the information you need. Most of the sentences are badly overwritten and the writing style is condescending sometimes and downright cutesy-pie at others. It would have benefited from judicious editing, especially the excessive number of quotation marks.

But that's my only criticism. There's an abundance of useful facts and suggestions. For instance, Mr. Glossbrenner's tips on buying subscriptions to one or more of these ser-

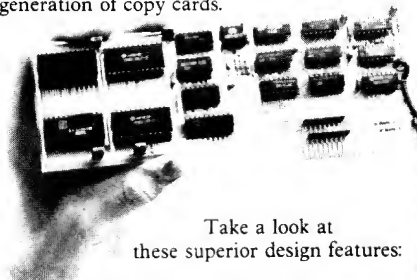
Accidents will happen...



Relax, you've got the Snapshot Copykit

We've taken the worry out of computer use. A damaged disk no longer means weeks of waiting for a costly replacement, because you can now backup your important software with the Snapshot Copykit.

Once again, Dark Star Systems have led the way with the introduction of the new generation of copy cards.



Take a look at these superior design features:

IT'S NEVER OUT OF DATE – The Snapshot Copykit exactly duplicates every byte of memory-resident programs up to 128k.

Other copy cards disturb several bytes of memory. Sophisticated copy protection schemes can detect these changes and make the resulting backup unusable.

Because all its software is in RAM rather than inflexible ROM, the system enhancements we develop can be made available to you at nominal cost.

A full 8k of on-board memory will make the Snapshot Copykit particularly expandable for future use as a printer buffer, a multi-tasking system, a communications dispatcher and much more.

IT'S COMPATIBLE – The Snapshot Copykit is a board for all systems. It sits in any slot on the Apple IIe and II+ as well as the Basis 108, the Franklin Ace and other "look-alikes".

The Snapshot Copykit doesn't need a language/memory card and won't interfere with any of your other peripherals. So, you never need to remove it after installation.

IT'S USER-FRIENDLY – We have a well-deserved reputation for providing easy to use products. The Snapshot Copykit is no exception.

Other copy cards force you to use complex, unreliable procedures and repeated booting of "utility disks" to copy larger programs.

Old fashioned "nibble-copier" programs involve endless trial-and-error parameter changes before they will work.

The Snapshot Copykit will backup memory-resident programs up to 128k with one simple menu and one press of the trigger – in seconds!

IT'S POWERFUL – The Snapshot Copykit gives you back the power over your computer that copy-protected software took away.

You can interrupt a running program, copy it, list it, disassemble it, step and trace it, modify it and resume running it. Great for debugging and customizing!

The program is not disturbed in any way, even if you suspend it for a while to run another!

All backups made with the Snapshot Copykit are automatically BRUNnable files which you can transfer to hard disk. Its state-of-the-art compression facility lets you stack several backups on one floppy.

IT'S GUARANTEED – All our products are covered by a 90-day, no-quibble guarantee for defective parts.

We also support you with free technical advice – all owners of the Snapshot Copykit receive our consultancy hot-line number.

SYSTEM REQUIREMENTS

SNAPSHOT IIe VERSION:

Copies memory-resident programs up to 128k.

Apple II, II+, IIe, Basis 108, Franklin Ace or other lookalike with disk drive.

PRICE: \$139.95

SNAPSHOT II VERSION:

Copies memory-resident programs up to 48k.

Apple II, II+ (RAMcard required – please specify brand when ordering), Basis 108, Franklin Ace or other lookalike with disk drive.

PRICE: \$119.95

TO ORDER: Mail check payable to Dark Star Systems. Add \$3 for shipping in the U.S. (\$7.50 to Canada, \$15 elsewhere). Mass. residents add 5% tax. COD costs \$5 extra (not available outside U.S.).

darkStar
SYSTEMS

R39A South Street,
WILLIAMSBURG, MA 01096
Telephone: (413) 268-7351

The Snapshot Copykit is the "ultimate unlock system" for programmers, business users and hobbyists. Find out more by calling or writing for our info packet and the latest news on software updates and other new products.



"For those who don't want to type in the programs, disks are available with the book."

vices will pay for the book. His hints on moving around each utility or database efficiently should save you both phone line and hookup charges. Unless you're already an expert on getting your computer to communicate with other computers, you'll find *Personal Computer Communications* well worth your time and money. ■

Ann Baldridge
Bloomington, IL

Pascal Programs for Business

by Tom Swan

Hayden Book Company Inc.
Rochelle Park, NJ

Softcover, \$15.95 or \$49.95 with disks

Here is a good book for intermediate Apple or UCSD Pascal users who are looking for more long and useful Pascal programs they can learn from and adapt. This book has 28 programs, as well as an all-purpose unit you can stuff in your system library.

About half the programs pertain to word processing. The program Columns is one you are likely to need, because the usual Pascal screen editor cannot make a text file print out in more than one column. Swan also gives a text formatter program which improves in some areas on the public domain ones.

The remainder of the instructive programs are of a general business nature, including some simple statistics and charting, financial analysis and an elementary spreadsheet.

Swan is evidently a professional programmer who uses these Pascal programs in his own work. They seem well tested and the program listings are printed right from the original text files, so you should have no trouble getting the programs to compile after you spend hours typing them in. I found only one misprint, a missing single quote on page 76 before the word "calculate."

For those who don't want to type in the programs, disks are available with

the book. If you do type the programs in, it may be some consolation to think that all that typing and debugging is necessary to figure out how Apple Pascal programs really work. One of the virtues of Pascal is that you can pull procedures out of one program and use them in another, or easily modify parts after debugging.

If you're a beginner, you need additional instruction on how to "include" files with the original Apple II Pascal 1.1 (better to say, Apple Language System) editor. (See page 63 of the *Apple Pascal Language Reference Manual* for more details if you have difficulties.) When using the original editor, you can eliminate the underline characters Swan uses for readability, and replace the curly brackets with asterisks inside parentheses. But if you do have the facility for entering and displaying the curly brackets, you can use them to comment out a section of the program (including any comments inside the other comment characters) you don't want compiled.

I would not recommend you try to save space by leaving out the comments Swan provides. They are useful and appropriate and do not take up any space in the compiled program.

The unit xtrastuff is the best part of the book. There are procedures for inputting to prompts and editing responses which are really elegant. Every Pascal programmer needs something like this. In chapter 4, Swan also explains the procedures in the unit and how to modify them. Unfortunately, the unit is exactly duplicated in Swan's twin book, *Pascal Programs for Games and Graphics*.

Chapter 3 gives a reference guide to some UCSD Pascal extensions. If you are planning to use this book with a version of Pascal such as Microsoft's IBM-PC or MT+, you will need to do more work since Swan uses many UCSD extensions when they come in handy. These programs should run with no trouble in Apple III Pascal, however.

I had one minor complaint about xtrastuff. The idea of compiling it as a unit and placing it in the system library is in large part to save space on your disk: You can use the same unit for each program that needs the routines it contains. When I installed it in my system library I discovered that it just barely slopped over to a second slot. If it were just a little smaller it would leave some precious room for another unit in the library.

You will have no trouble using these programs without an 80-column card. Apple Pascal allows you to scroll or switch between two 40-column screens side by side. Swan's menus use only the left side.

There are some problems with the honeycalc visiclone program. If you type in the program without making any changes first (as well you should), you will discover there is an arrow to the right of the cell storing the result of a calculation. This is a place marker or reminder, but acts more like a stolen bookmark: The arrow overprints any information already in that cell (just on the screen, as the original is still in memory), and over the row letter in the first column of the next row if you enter a result in the last column on the right. You cannot display formulas—you just point to a cell with your cursor and enter an arithmetic function.

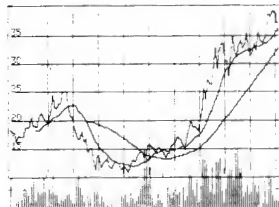
Also, the numbers are not formatted properly. You are allowed only a money format with two decimal places. If you enter a number such as 99000, it will have one zero after the decimal place instead of two, while if you enter 999000, it will have no zeros, and one million will get you 1.00000E6! Hmm.

The sort-text program works pretty fast, but needs more polishing for business use. For example, it sorts lowercase letters to the end of uppercase characters, the same as the ASCII sequence. But usually "von Beethoven" comes before "Westinghouse," not after "Zzygy." Also, numerals must be right-justified in order to be sorted properly, and all the same length, padded with zeros. Otherwise the one digit numbers come before the two digit ones,

STOCK MARKET ANALYZER FOR THE SMALL INVESTOR

STOX, a complete, self-contained data base system, provides the small investor with the ability to create and maintain a personalized data base of stock and commodity prices. This powerful system contains all the features necessary for complete control, yet is still fast and user-friendly. Unique data file format downloads up to 12 stocks into RAM in just 12 seconds for instant review without time-consuming data access. Compatible with most printers for data and charts.

Enter data manually or order historical data disks from the Mail-In-Modem™ by Stockware Systems. Data is available for individual stocks at economical prices. Please write for complete information on both STOX and the Mail-In-Modem.



US -1P CHART 1/18/83 HI= 39.5
39.5H 1M L=25.0T L= 10.8T
H=10.539 L=10.539 CL= 35.625
Typical chart as drawn by STOX

STOX
(2 disks & manual) .. \$95
Manual Only
(full credit toward
purchase) \$15

STOCKWARE SYSTEMS
9837 Folsom Blvd.
Suite J309
Sacramento, CA 95827

Requires Apple®][+ or][e, 48K RAM and DOS 3.3

To order, send cashiers check or money order for next day shipment. Personal checks require 2 weeks to clear. Shipping/handling charge included in price. COD orders accepted, add \$3.00. California residents add 6% sales tax.

Apple is a trademark of Apple Computer, Inc.

Looking for software at Reasonable Prices?



Look no
further —



Please send information on the following:

—Apple, IBM, TI
—Commodore, Atari
—400/800 Computers

Name _____

Address _____

City _____ State _____ Zip _____

COOSOL COMPUTER PRODUCTS

Circle 269 on Reader Service card.

COLUMBIA DATA MPC



- COLUMBIA System Includes: IBM COMPATIBLE Dual Floppies, 128K RAM, Two RS-232 Serial ports, Centronic Printer port, IBM Compatible Keyboard, Hi-Res Color Graphics Card, Green or Amber Monitor and more with \$3,000 Software bundle.

COLUMBIA LOW TOTAL PRICE CALL

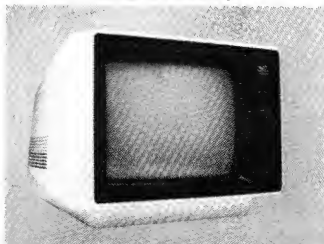
OTHER COMPUTERS

- EAGLE II Business Computer CALL
- EAGLE III Business Computer CALL
- EAGLE IV Business Computer CALL
- EAGLE 1630 Computer CALL
- All EAGLE CPUs Includes Software Bundles
- NEC PC-8001A, PC-8012A, PC-8031A, JB-1201, PC-8023 w/Software... (NEC SYSTEM) \$1995
- NEC PC-8800 8-BIT or 16-BIT w/Software CALL
- NEC APC SYSTEM 16 bit CALL
- SANYO MBC-1000 with Bundled Software \$1595
- SANYO MPC-3000 with Bundled Software CALL
- SANYO—NEW PC CALL

SOFTWARE

- STONEWARE CALL
- SUB LOGIC—FLIGHT SIMULATOR ... \$33
- VISI CORP—VISICALC \$239
- ASTON-TATE D BASE II \$465
- CONTINENTAL ACCOUNTING CALL
- I U S EASY WRITER \$89
- LOTUS CALL
- MICRO PRO WORD STAR \$372

MONITORS



COLOR RGB & OTHER MONITORS

- NEC JB-1205MA AMBER CALL
- NEC JC-1203DH(A) Hi-Res RGB \$599
- NEC JB-1201 Green CALL
- AMDEK Hi-Res RGC and others CALL
- PRINOTON GRAPHICS Hi-Res RGB CALL
- TAXAN Hi-Res RGB and others CALL

MODEMS

- HAYES SMARTMODEM (300 BAUD) .. \$227
- HAYES SMARTMODEM (300 & 1200) CALL
- HAYES CHRONOGRAPH \$199
- NOVATION J-CAT \$120
- NOVATION 212 AUTO-CAT CALL
- SIGNALMAN MARK I and others CALL
- U.D.S. Series Modems CALL

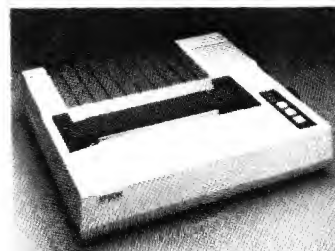
CARDS

- AMDEK RGB COLOR II INTERFACE . \$169
- M&R ENTERPRISES RGB INTERFACE . \$69
- VIDWX VIDEOTERM CARD \$285
- B P O 16K EPSON, OKIDATA, NEC... \$159
- WIZARD IPL \$85
- OTHER APPLE CARDS CALL

PRINTERS

- EPSON FX Series CALL
- EPSON RX-80 w/GRAFTRAX + CALL
- EPSON MX-100, 80, & F/T w/GRAFTRAX + CALL
- OKIDATA 82A \$420
- OKIDATA 83A, 84A CALL
- OKIDATA 92, 93, 2350, & 2410 CALL
- NEC 3550 CALL
- NEC 3510, 3515, 3520, 3525, & 3530 CALL
- NEC 7710, 7715, 7720, 7725, & 7730 CALL
- NEC PC8023A-C \$449

NEC PRINTERS



OTHER PRINTERS

- BROTHERS HR-1 Serial or Parallel ... \$799
- COMREX CR-1 Serial or Parallel CALL
- DAISYWRITER 2000 w/48K Buffer ... CALL
- TOSHIBA P1350-P or P1350-S \$1649
- SILVER-REED EXP550-P or EXP550-S CALL
- GEMINI 10X... \$355, GEMINI 15... \$499
- C.ITOH 8510 Parallel or Serial CALL
- C.ITOH 1550 Parallel or Serial CALL
- C.ITOH F10-40 and F10-55 Parallel or Serial CALL

CALL 7 DAYS (800) 854-8498 Calif. (714) 545-2216
COOSOL, INC., P.O. Box 2642, Costa Mesa, CA 92626-2642
Computer Baron 3017 Harbor Blvd., Costa Mesa, CA 92626 (714) 979-2488

which come before the three digits ones, etc.

The identifier program works fast too, but also needs more work. The reserved words are capitalized, and the remainder in lowercase, but the indentation is not accurately preserved.

It is difficult to locate programs as there is no index to the book nor list of program names.

After you spend hours typing in these programs you might wonder if you really should be trying to learn Pascal as a programming language. Once you learn Pascal you can learn any other language or computer application easily. Swan's book is an excellent next step after learning the basics. ■

Eric Eldred
Derry, NH

The Soul of CP/M

by Mitchell Waite
and Robert Lafore

Howard W. Sams & Co. Inc
4300 West 62nd St.
Indianapolis, IN 46268

Softcover, \$18.95

When Digital Research Corporation introduced the CP/M operating system some years

ago, few people would have guessed the extent of its acceptance in the often-changing field of small computers. By accepting this one standard system, hardware manufacturers provided their users with an enormous selection of applications programs, while software writers could spend more time perfecting their programs and less time adapting them to various systems.

"If you are not careful you may even find yourself learning machine and assembly language..."

For all of its flexibility, many users see only the tip of the CP/M iceberg. Most never go beyond simple copy and format functions, leaving the more exotic features of CP/M to those less intimidated by such things.

The Soul of CP/M takes you into the deepest, darkest heart of CP/M, and does it without the confusion (or boredom) common to so many computer tutorials.

Mitchell Waite and Robert Lafore present their information in a light, totally painless fashion, introducing new concepts so smoothly that you feel like you have known them all

along. If you are not careful you may even find yourself learning machine and assembly language after all these years of considering them unfathomable.

Part of this book's unique approach is that it focuses all of its information back onto CP/M; if something new is introduced, you clearly see how this relates to CP/M. Right from the start, the writers have you using CP/M's DDT (Dynamic Debugging Tool) to practice interfacing with Basic, changing sections of CP/M itself, and tackling machine language programming one bite-sized chunk at a time.

While it is certainly not a first-time user's guide, *The Soul of CP/M* is great for anyone familiar enough with CP/M to know the difference between PIP and ASM. It won't be long before you write machine-language subroutines for your Basic programs and mold the operating system to suit *you*, instead of the other way around.

The Soul of CP/M is an outstanding reference work, aside from its obvious benefit as an instructional text. One example: The section dedicated to CP/M's assembler routine provides a much clearer guide to its operation than any provided with the system itself. Appendices are provided for such items as 8080 instructions, BIOS system calls and sample utility programs.

At \$18.95, *The Soul of CP/M* is not a book you buy on a whim, but it is a

Circle 245 on Reader Service card.

IT'S SIMPLE. . .CALL AND SAVE MONEY!

Since 1978

1-800-841-0860

**GA. & INFO
912-377-7120**

**DIRECT MARKETING
COMPUTERS AND
EQUIPMENT
TO SAVE YOU MONEY!**

FREE UPON REQUEST

*PRICE LIST AND INFORMATION KIT
*COPY OF MFR'S WARRANTY
PRICES AND PRODUCTS ARE SUBJECT TO
CHANGE WITHOUT NOTICE.

**TRS-80
COMPUTERS
UP TO
20%
DISCOUNT**

**TAXAN
MONITORS
*CALL**

F FRANKLIN

ACE 1000 ACE 1200

***CALL**

PRINTERS

EPSON SCM TP-1 OKIDATA
STAR C.I.TOH BANANA

Novation

Hayes

***CALL**

**RB
ROBOT
*CALL**



**MicroManagement
Systems, Inc.**

2803 Thomasville Road East
Cairo, Georgia 31728
TELEMARKET DEPT.

#36

EASTCOAST SOFTWARE

ECS...inflation-fighting prices.

No hidden charges! No credit card fees!

APPLE

HARDWARE	LIST	SALE
Adam & Eve Paddles	39.95	27.50
Amdek 300A 12 in Amber Mon.	199.00	161.50
Amdek 300G 12 in Green	179.00	143.40
Amdek Color I Monitor	399.00	320.60
Apple Cat 2 Modem	389.00	284.30
Apple Duplicator GX	159.00	105.50
Appli-Card (6 MHz)	375.00	287.50
Banana Printer	249.95	221.55
Bufferboard - 16K Upgrade	28.00	15.00
Bufferboard - 16K	175.00	132.60
Buffered Grappler + (16K)	239.00	178.00
Echo 2 Speech Synthesizer	149.95	125.60
Enhancer II	149.00	113.30
Function Strip	79.00	57.15
Gorilla 12 in Green Scrn	99.00	91.50
Grappler +	165.00	128.00
Koala Graph Tablet-Apple	124.95	91.05
Kraft Joystick	64.95	46.00
Kraft Paddles	49.95	35.35
Micro-Sci A2 Disk Drive	345.00	266.50
Micro-Sci C2 Controller	100.00	81.70
Microbuffer II-16K	259.00	198.60
Microbuffer II-32K	299.00	229.25
Microbuffer In-Line 64K	349.00	279.60
Microline 92	699.00	570.00
Micromodem II	379.00	270.95
Micromodem II W/Term Prog.	409.00	298.65
Mockingboard I	179.00	152.00
NEC 1201 Green Monitor	285.00	166.15
NEC 1212 Color Monitor	399.00	310.00
NEC 1260 Green Monitor	149.95	113.50
NEC PC8023 Printer	599.00	441.85
NEC PC8025 Printer	975.00	825.00
Parallel Card W. Cable	99.00	56.55
PI-2 12 in Green Monitor	210.00	154.55
PI-3 12 in Amber Monitor	249.00	162.00
PI-4 9 in Amber Monitor	199.00	144.50
Plaso Interface	175.00	132.60
Prowriter 1550 Printer	995.00	750.00
Prowriter 8510 Printer	595.00	500.00
Ramcard 16K (Microsoft)	99.95	75.00
Ramcard - 16K (MPC)	99.00	60.25
Ramcard - 16K (Prometheus)	99.00	56.55
Ramex 128	499.00	366.80
Sansy 8112 12 in Green Mon	260.00	204.60
Saturn 128K Ram Board	499.00	382.60
Saturn 64K 80 COL IIE	249.00	207.30
Saturn Accelerator II	599.00	441.10
Select-A-Port	59.95	45.80
Serial Interface W. Cable	149.00	131.95
Smarterm 2	179.00	134.45
Smarterm Standard	345.00	271.15
Soft Video Switch	35.00	26.85
Softcard	345.00	253.00
Softcard - IIE	495.00	350.35
Softcard Premium System	695.00	500.00
Software Automouth	124.95	86.35
SSM Apple Modem Card	325.00	252.75
SSM Transpak 2	448.00	375.70
Starwriter F10-40PU Printer	1,895.00	1,562.50
Sup'r Mod - Universal	69.95	53.05
Sup'rterm 80 Col Board	349.95	260.00
System Saver	89.95	70.75
Taxan 12 in Amber Monitor	189.00	138.65
Taxan 12 in Green Monitor	179.00	131.60
Taxan Color Mnt'r W. Audio	399.00	305.50
TG Game Paddles	39.95	30.55
TG Joystick	64.95	45.80
TG Track Ball	64.95	46.00
Tymac Parallel Card PPC100	139.00	79.90
Ultraterm	379.00	290.60
Versacard	199.00	157.00
Videoterm Board	279.00	213.35

Videoterm W/SS & Inverse	319.00	247.05
Wildcard	139.00	104.85
Wizard 80 Col Board	249.00	169.75
Wizard-16 (16K Ram)	95.00	62.85

HOME/EDUCATION

	LIST	SALE
Algebra 1,2,3, or 4	39.95	\$27.60
Alien Addition (Home)	29.95	23.95
Bumble Games	39.95	28.30
Bumble Plot	39.95	28.30
CDEX - How to use the IIE	59.95	43.35
Compu-Math/Arith. Skills	49.95	34.50
Compu Spell System	29.95	20.70
Delta Drawing	59.95	43.00
Demolition Division (Home)	29.95	23.95
Early Games	29.95	23.95
Facemaker	34.95	24.85
Game Show	39.95	31.95
Gertrude's Puzzles	44.95	31.85
Gertrude's Secrets	44.95	31.85
Home Accountant	74.95	48.05
How to Pgm in Applesoft	49.95	35.35
Juggles Rainbow	29.95	21.20
Kindercomp	29.95	20.70
Know Your Apple IIE	24.95	17.65
Master Type	39.95	28.30
Meteor Multiplication - Home	29.95	23.95
Micro Cookbook	40.00	27.65
Preparing for the SAT	79.95	62.85
Preschool IQ Builder I	23.95	16.95
Rocky's Boots	49.95	35.35
SAT Word Attack Skills	49.00	33.90
Sentence Diagramming	25.95	20.75
Snooper Troops 1 or 2	44.95	32.50
Spelling Bee Games	29.95	20.70
Step-By-Step	79.95	56.60
Story Machine	34.95	25.45
Typing Tutor 2	24.95	17.55

WORD PROCESSING

	LIST	SALE
1st Class Mail Form Letter	\$99.95	\$64.10
Appewriter 2 Pre-Boot	19.00	13.45
Bank Street Writer	69.95	48.35
Easy Writer (Pro)	175.00	121.00
Format II Enhanced	150.00	108.50
Letter Perfect	149.95	103.60
Magic Window 2	150.00	109.25
PIE Writer 2.2 (40-80)	149.95	106.15
Screenwriter II	129.95	89.00
Screenwriter Professional	199.95	138.25
Sensible Speller IV	125.00	86.50
Supertext Pro (Special)	99.00	70.10
The Dictionary	99.95	69.00

GRAPHICS

	LIST	SALE
Alpha Plot	\$39.50	\$27.25
Apple Mechanic	29.50	20.35
Complete Graphics System	69.95	48.35
EZ Draw 3.3	49.95	35.35
Frame-Up	29.50	20.35
Graphics Magician	59.95	41.40
Hi-Res Secrets	125.00	86.35
Slideshow	49.95	35.50
Special Effects	39.95	27.60
The Artist	79.95	55.25
Typefaces	20.00	13.85
Zoom Graft	49.95	34.50

UTILITIES

	LIST	SALE
ASCII Express (Pro)	\$129.95	\$94.00
Bag of Tricks	39.95	28.30
Copy II Plus	39.95	25.65
Data Capture IIE	90.00	63.70
DOS Boss	24.00	16.60
Flex Text	29.50	20.35
Global Program Line Editor	65.00	47.00
Locksmith	99.95	68.50
Nibble's Away II	69.96	53.25
Pronto DOS	29.50	20.35
Super Disk Copy 3	34.95	24.15
Tasc	175.00	121.50
Tip Disk #1	20.00	13.85
Utility City	29.50	20.35
Videoterm Utilities Disk	37.00	26.20
Visicalc Pre-Boot	49.00	34.70
Visicalc 80/Memory Expand	89.00	64.40

GAMES

	LIST	SALE
AE	\$34.95	\$24.15
Apple Cider Spider	33.33	23.00
Arcade Machine II	59.95	41.40
Aztec	39.95	27.60
Battle for Normandy	39.95	28.90
Beagle Bag	29.50	20.35
Bob-A-Bet	27.95	19.30
Buzzard Bait	34.95	24.75
Castle Wolfenstein	29.95	20.70
Chess	69.95	48.35
Choplifter	34.95	23.55
Cosmic Balance II	39.95	29.05
Crush Crumble & Chomp	29.95	20.70
Deadline	49.95	34.50
Decathlon	29.95	20.70
Flight Simulator	33.50	25.70
Frogger	34.95	23.55
Jawbreaker	29.95	20.70
Knight of Diamonds	34.95	24.75
Legacy of Lylgamy	39.95	28.30
Miner 2049er	39.95	28.30
Pinball Construction Set	39.95	27.60
Sea Fox	29.95	20.70
Spy's Demise	19.95	13.80
Starcross	39.95	27.60
Strip Poker	34.95	26.90
Temple of Apshei	39.95	27.60
Thunderbombs	19.95	13.80
Ultima II	59.95	41.40
Ulysses & Golden Fleece	34.95	24.00
Witness	49.95	35.35
Wizard & Princess	32.95	22.75
Wizardry	49.95	35.35
Wizard	39.95	27.60
Zaxxon	39.95	27.60
Zork I, II, or III	39.95	27.60

SUPPLIES

	LIST	SALE
Dust Cover - Apple 2/2E	\$9.10	\$6.85
Elephant Disks SS/DD (10)	37.00	24.35
Elephant Disks SS/SD (10)	34.00	21.15
Epson MX-80 Ribbon 2-Pac	28.00	12.55
Flip-N-File (Disks)	29.95	18.85
Head Cleaning Kit	29.95	17.70
Maxell MD1 Disks (10 Pack)	51.90	29.40
NEC 8023 Ribbon 2-Pac	19.95	17.10
Starwriter Film Ribbon	5.50	4.50
Starwriter Nylon Ribbon	5.75	4.65
Trunk Floppy Storage	29.95	21.50
Verbatim MD 525 Softpack	34.00	26.95
Verbatim MD 525 Hard Pack	35.00	27.60

BUSINESS

	LIST	SALE
Accounting + Gen Ledger IIE	\$450.00	\$310.95
BPI General Accounting	395.00	301.60
CDEX Visicalc IIE Training	59.95	42.45
DB Master Stat Pack	99.00	69.50
DB Master Util Pack 1 or 2	99.00	69.50
DB Master Version 4	350.00	247.70
Dow Jones Market Analyzer	350.00	293.75
General Manager II	229.95	158.90
Market Microscope	700.00	598.75
Multipan (DOS or CP/M)	275.00	190.50
PFS File II or IIE	125.00	85.95
PFS Graph II or IIE	125.00	85.95
PFS Report II or IIE	125.00	85.95
The Accountant	129.00	99.25
Versaform	389.00	263.00
Visicalc II or IIE (Special)	250.00	172.00
Visidex	250.00	189.90
Visifile	250.00	189.90
Visischedule	300.00	227.85
Visitrend/Visiplot	300.00	227.85

800-233-3237

For Orders Only

Apple is a registered trademark of APPLE COMPUTER INC.

CHECK ONE: ☐ VISA ☐ MASTERCARD

Card# _____ Exp. _____

Telephone _____

Name _____

Address _____

City _____

State _____ Zip _____

Please enter my order for: _____

Please specify machine: _____

☐ Please send free catalog.

EASTCOAST SOFTWARE

40 Hockersville Rd.

Hershey, PA 17033

MAIL YOUR ORDER OR CALL

(717) 533-8125 or 533-8480

We Ship UPS - Shipping 1% (\$2.50 min.)
C.O.D. Add an Additional \$2.50

Hardware (Printers/Monitors)

Shipping is \$2.50 + 6% (U.P.S.)

For Air Mail, Canadian, APO, FPO, or Overseas Orders,

Shipping \$2.50 + 9% of Total Order (US Funds)

No Minimum Order
Visa-Mastercard-C.O.D.-Check

Prices Subject To Change

800-233-3237



This ad prepared August, 1983

NUMBER COMMANDER —™

Complete System for ANYONE working with numbers

→ NO computereze. Use plain English to:

- File/Fix up to 29 variables/set in any order
- Integral full-feature calculator, a \$35 value
- Find, Use, Print data fast. Formatted tables
- Compute/Print/File statistics for each variable
- Print/File Diagrams from filed/computed data
- Regression: Simple/Multiple, Linear/Log/other uses any no. of data sets. Use/File correlation
- File/Find/Print Notes coordinated with data
- Manual, 2 personalized copyable disks, David Dos

Requires: Apple IIe, Apple or Smartterm 80 col. bd or 48k Apple II+ w. Smartterm, 2 drives, DOS 3.3.

Effortlessly uses: Centronics 737, IDS-460 w.

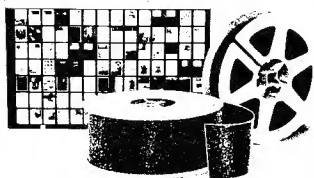
Apple parallel; Apple DMP, Epson MX-80, NEC-PC-8023A-C & Spinwriter w. Grappler+. Other 132 chr/line, controllable feed comb's to be tested.

Not required: Computer knowledge, strict plan

Send \$125 to ComputerEase Inc., 1312 W. Cedar St., Appleton, WI 54914. Wisc. res. add \$6.25 tax.

Allow 3 weeks for checks to clear. Ph:414/739-7751

this publication is available in microform



University Microfilms International

300 North Zeeb Road
Dept. P.R.
Ann Arbor, MI 48106
U.S.A.

18 Bedford Row
Dept. P.R.
London, WC1R 4EJ
England

Subscription Problem?

inCider does not keep subscription records on the premises, therefore calling us only adds time and doesn't solve the problem.

Please send a description of the problem and your most recent address label to:



Subscription Dept.
PO Box 911

Farmingdale, NY 11737

Thank you and enjoy your subscription

Book Reviews

great book for any serious system user. There are few books that give this level of information at any price, and when you consider the superb writing style, *The Soul of CPM* is a bargain; I can recommend it with little hesitation. ■

Chuck Doherty
So. Dartmouth, MA

"The book is well written,
and complicated technical
material is clearly
explained."

Hardware Interfacing with the Apple II Plus

by John Uffenbeck

Prentice-Hall Inc.

Box 500

Englewood Cliffs, NJ 07632

Softcover, \$19.95

Are you a computer hacker who has to fight the urge to pop the top on your Apple and poke around inside? Do you delight in building joysticks, installing unique hardware interfaces, replacing ROM chips and connecting cable straps? If you do, then *Hardware Interfacing with the Apple II Plus*, written by John Uffenbeck, is the book for you.

This book was definitely *not* written for individuals just beginning to explore the depths of digital electronic circuitry. The author wrote the book for the hacker who is proficient in Basic programming, digital breadboarding and using the 7400 series of digital logic gates. The book is by nature a workbook. A series of 13 hardware interfacing experiments range from demonstrations of address decoding to constructing a programmable sound generator. Each experiment is well organized and includes: 1) a list of objectives for the experiment; 2) a thorough parts listing; and, 3) a discussion of the theoretical

basis for the experimental procedure. The book is well written, and complicated technical material is clearly explained.

There is a small inconvenience associated with the use of most workbook texts, and this book is no exception. In addition to the book itself, supplementary materials must be purchased before these 13 experiments can be successfully accomplished. If you own a soldering iron and have a "junkbox" of electrical components, then it should cost you less to complete these interfacing experiments than if you start from scratch. However, the *basic* materials needed to accomplish the experiments in Mr. Uffenbeck's book are a soldering iron, pliers, wire cutters, solder and wire. The approximate cost of these basic materials is \$30.

Additionally, the author recommends the acquisition of several optional pieces of electronic equipment: logic probe (\$20-\$35), multimeter (\$10 minimum), wire stripper (\$10) and oscilloscope (megabucks!). Although these optional items are not necessary to complete the experiments, they would be extremely helpful. Mr. Uffenbeck also offers several recommendations for where to purchase the electronic components needed to complete the experiments in his book. The estimated cost of the required parts is \$150.

In summary, the items necessary to successfully complete the 13 interfacing experiments are: the book (\$19.95); the basic materials (\$30); the optional items—less oscilloscope—(\$50); and the electronic components (\$150). Thus, the total estimated cost of the venture is \$249.95. I feel that this cost is relatively small compared to the value of the lessons to be learned from this book, and I heartily recommend the book as a source of information and just plain fun. After all, most of the electronic components are reusable and they will undoubtedly come in handy when you build your first robot. ■

Michael Waugh
Statesboro, GA

READER SERVICE

My vote for the best advertisement in this issue goes to _____ (company) whose Reader Service number is _____.

A. How thoroughly do you read the articles in *inCider*?

- ☐ 1. Read almost all articles thoroughly
☐ 2. Skim almost all articles
☐ 3. Read some thoroughly, skim others
☐ 4. Just use for reference

B. If you were planning to purchase an additional computer would you buy another Apple?

- ☐ 1. Yes ☐ 2. No

C. Do you own a VCR?

- ☐ 1. Yes ☐ 2. No

D. Where do you purchase most of your computer equipment?

- ☐ 1. Computer or electronics store
☐ 2. Department store
☐ 3. Mail order
☐ 4. Direct from manufacturer
☐ 5. Office equipment dealer
☐ 6. Used equipment dealer
☐ 7. From private individuals

E. How much do you plan to spend on software during the next 12 months?

- ☐ 1. Nothing
☐ 2. Less than \$100
☐ 3. \$100-\$250
☐ 4. \$250-\$500
☐ 5. \$500-\$1,000
☐ 6. Over \$1,000

F. Which of the following types of software do you plan to purchase during the next 12 months?

- ☐ 1. Games
☐ 2. Education
☐ 3. Word processing
☐ 4. Spreadsheet
☐ 5. Utility
☐ 6. Home finance
☐ 7. Stock market analysis

G. Which of the following hardware items do you plan to purchase during the next 12 months?

- ☐ 1. Printer
☐ 2. Plotter
☐ 3. Modem
☐ 4. Joystick
☐ 5. Graphics tablet
☐ 6. Synthesizer
☐ 7. 68000 board
☐ 8. Disk drive
☐ 9. Monitor

H. Do you use your Apple for any of the following applications?

- ☐ 1. Business
☐ 2. Word processing
☐ 3. Home/Hobby
☐ 4. Games
☐ 5. Programming
☐ 6. Education
☐ 7. Other

I. If you have children who use computers, how old are they?

- ☐ 1. 5 or under
☐ 2. 6-10
☐ 3. 11-15
☐ 4. 16-18
☐ 5. 19-22

J. If you have school age children, where do they use computers?

- ☐ 1. Home
☐ 2. School
☐ 3. Work
☐ 4. They don't use computer

K. On a scale of 1 (no interest) to 5 (great interest), please rate your interest in the following types of articles:

- ☐ 1. Programming techniques
☐ 2. Reviews
☐ 3. New products
☐ 4. Hardware construction
☐ 5. Application programs
☐ 6. Speech/sound
☐ 7. News
☐ 8. Editorial
☐ 9. Telecommunications

L. If you are not a subscriber please circle 500.

Reader Service: Return this card to receive full information on the products advertised in this issue. Refer to the ad. You will find numbers near the logo of each advertiser. Each represents the advertiser's individual Reader Service number. Circle the corresponding numbers on the card on this page. Include your name, address & zip, and drop in a mailbox. In 4-6 weeks you'll hear from the advertiser directly.

This card valid until March 31, 1984.

1	6	11	16	21	151	156	161	166	171	301	306	311	316	321	451	456	461	466	471
2	7	12	17	22	152	157	162	167	172	302	307	312	317	322	452	457	462	467	472
3	8	13	18	23	153	158	163	168	173	303	308	313	318	323	453	458	463	468	473
4	9	14	19	24	154	159	164	169	174	304	309	314	319	324	454	459	464	469	474
5	10	15	20	25	155	160	165	170	175	305	310	315	320	325	455	460	465	470	475
26	31	36	41	46	176	181	186	191	196	326	331	336	341	346	476	481	486	491	496
27	32	37	42	47	177	182	187	192	197	327	332	337	342	347	477	482	487	492	497
28	33	38	43	48	178	183	188	193	198	328	333	338	343	348	478	483	488	493	498
29	34	39	44	49	179	184	189	194	199	329	334	339	344	349	479	484	489	494	499
30	35	40	45	50	180	185	190	195	200	330	335	340	345	350	480	485	490	495	500
51	56	61	66	71	201	206	211	216	221	351	356	361	366	371	501	506	511	516	521
52	57	62	67	72	202	207	212	217	222	352	357	362	367	372	502	507	512	517	522
53	58	63	68	73	203	208	213	218	223	353	358	363	368	373	503	508	513	518	523
54	59	64	69	74	204	209	214	219	224	354	359	364	369	374	504	509	514	519	524
55	60	65	70	75	205	210	215	220	225	355	360	365	370	375	505	510	515	520	525
76	81	86	91	96	226	231	236	241	246	376	381	386	391	396	526	531	536	541	546
77	82	87	92	97	227	232	237	242	247	377	382	387	392	397	527	532	537	542	547
78	83	88	93	98	228	233	238	243	248	378	383	388	393	398	528	533	538	543	548
79	84	89	94	99	229	234	239	244	249	379	384	389	394	399	529	534	539	544	549
80	85	90	95	100	230	235	240	245	250	380	385	390	395	400	530	535	540	545	550
101	106	111	116	121	251	256	261	266	271	401	406	411	416	421	551	556	561	566	571
102	107	112	117	122	252	257	262	267	272	402	407	412	417	422	552	557	562	567	572
103	108	113	118	123	253	258	263	268	273	403	408	413	418	423	553	558	563	568	573
104	109	114	119	124	254	259	264	269	274	404	409	414	419	424	554	559	564	569	574
105	110	115	120	125	255	260	265	270	275	405	410	415	420	425	555	560	565	570	575
126	131	136	141	146	276	281	286	291	296	426	431	436	441	446	576	581	586	591	596
127	132	137	142	147	277	282	287	292	297	427	432	437	442	447	577	582	587	592	597
128	133	138	143	148	278	283	288	293	298	428	433	438	443	448	578	583	588	593	598
129	134	139	144	149	279	284	289	294	299	429	434	439	444	449	579	584	589	594	599
130	135	140	145	150	280	285	290	295	300	430	435	440	445	450	580	585	590	595	600

Name _____
 Address _____
 City _____ State _____ Zip _____

Cider • February 1984

BOOKS

Cider
 Peterborough NH 03458

Please send me the following **Cider** products:

Qty.	Catalog #	Title	Unit price	Total

Shipping and handling charges:
 \$1.50 1st book, \$1.00 each additional book
 (U.S. use street address)
 \$10.00 each book overseas airmail

Enclosed \$ _____ ☐ Check ☐ M.O.

Bill: ☐ AE ☐ MC ☐ VISA

Card# _____

Exp. date _____ Interbank# _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Please allow 4-6 weeks for delivery.

No C.O.D. orders accepted.

2-84



ENTER my subscription to **inCider** for one year at \$24.97. I understand that with payment enclosed or credit card order I will receive a **FREE** issue, making a total of 13 issues for \$24.97.

☐ Check enclosed ☐ MC ☐ VISA ☐ AE ☐ Bill me

Exp. date _____ Card # _____

Signature _____

Name _____

Address _____

City _____

State _____ Zip _____

Canada and Mexico \$27.97, 1 year only, US funds drawn on US bank.

Foreign surface \$44.97, 1 year only, US funds drawn on US bank.

Please allow 6-8 weeks for delivery.

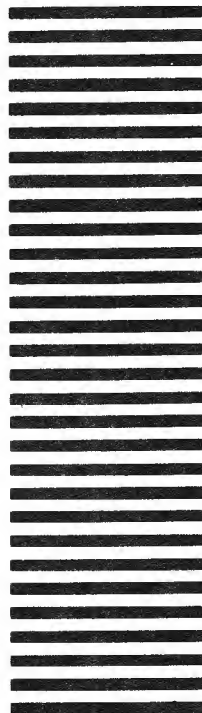
*This price voids all previous offers.

inCider® PO Box 911 • Farmingdale, NY 11737

342F59



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS

PERMIT NO. 27

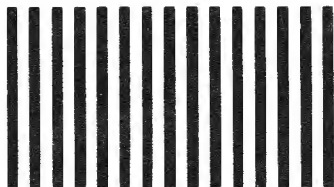
DALTON MA 01226

POSTAGE WILL BE PAID BY ADDRESSEE

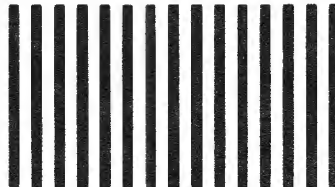


P.O. Box 336
Dalton, MA 01226

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 73, PETERBOROUGH NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

Wayne Green
Attn: Book Sales
Elm St. and Rte. 101
Peterborough, N.H. 03458



BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 73 PETERBOROUGH, NH 03458

POSTAGE WILL BE PAID BY ADDRESSEE

Wayne Green Inc.
inCider®
Subscription Dept.
POB 911
Farmingdale NY 11737

Index to Advertisers

Reader Service	Page No.	Reader Service	Page No.	Reader Service	Page No.
194 3M Company	CII	318 Fastrack Computer Center	119	476 PC Ware Inc	192
501 Abacus/Compusource	47	161 Fiberbilt	123	488 Personal Computer Products	190
26 Action-Research Northwest	101	374 Flowersoft	176	141 Pirates Harbor	170
342 Action-Research Northwest	171	423 Franklin Computer	21	484 Polycard Industries	189
168 Addmaster Corp.	142	425 Franklin Computer	23	305 Practical Peripherals	81
435 Afips	125	426 Franklin Computer	25	164 Practical Software	149
178 Alpine Computer Systems	143	49 Frogg House/Prof. Jones	189	506 Primesoft Corp.	133
192 Alternative Computer Supply	142	468 Gessler Educational Software	180	504 Prism Software/	
* American Tourister	27	146 Golem Computers	126	Spectrum Computer	31
337 Analytical Engines Inc.	3	408 Goeth Software	171	Prometheus Products	9
97 Anthro-Digital Software	182	66 H & E Computronics	CIII	274 Protecto Enterprises	86, 87
451 Anthro-Digital Software	178	381 H & W Computer Systems	193	481 Purolator Inc	188
470 Apple Computer	184	458 HAL Labs	180	16 Quinsept Inc.	153
24 Appware Inc.	143	431 Harper & Row Software	11	491 Qwerty Inc.	184
* Applied Engineering	165, 193	154 Harvest Time	89	411 R & S Software	133
461 Avant-Garde Creations	180	405 Hollywood Hardware	102	148 RCM Software	149
433 Balmoral Inc.	153	398 Holmes Enterprises Inc.	137	487 Ring King Visibles Inc.	191
327 BASF	115	263 Human Systems Dynamics	18	309 Rising Sun Software	177
179 Beagle Brothers Microsoft	154, 155	304 Human Systems Dynamics	20	415 Rivcom	137
271 Beaman Porter Inc.	90	419 Human Systems Dynamics	28	227 Rocky Mountain Software	139
35 Bible Research Systems	150	440 I/O Ware	187	140 Rule One	117
344 Bill Cole Enterprises	111	503 Ibid Inc.	7	* Safeware	116
* Bottom Line	14, 15	462 Ibid Inc.	178	255 Sansoft Plus	145
346 Broderick & Associates	169	* inCider Subscriptions	67	223 Sav-Soft Products	116
11 Business Computers		Dealer Sell	194	283 Selectronics	190
of Peterborough	63	Foreign Dealers	190	* Sensible Software	43
284 Byte General Inc.	153	Run Subscriptions	99	452 Sensible Software	183
6 Bytes & Pieces	72	Subscription Problems	162	459 Shelter Software	182
335 C & C Software	150	University Micro	162	246 Sinequanon	111
232 C & S Software	159	456 Indian Head Software	178	218 Sir-Tech	50, 51
295 Carolina Microsystems	127	12 Interactive Microware	123	131 Skillware	60
361 Central Point Software	55	317 Ivers Specialists	108	453 Soft-Life Corporation	178
475 Chessell-Robocom Corporation	184	469 Jor-And	180	266 Softronics	100
400 Classical Computing	111	62 Kalgo Electronic Company Inc.	186	118 Software Masters	109
316 CMA Micro Comp.	171	216 Kemcore Company	193	224 Software Support	141
466 Columbia Software	180	86 Kensington Microware	17	397 Southern Cal Micro	24
457 Compu-Quote	182	44 Lazerware	175	103 Southern Center for Res. Inn.	153
480 Compugraphics Corp.	191	306 Locus Systems	109	504 Spectrum Computers/	
502 Computer Ease	162	436 Lonestar Computerware	128	Prism Software	31
427 Computer Learning Center	74, 75	396 Manx Software Systems	77	193 Star Micronics Inc.	41
254 Computer Outlet	135	* Margrace/Easy Access	79	132 Stockware Systems	159
472 Computer Peripheral Products	188	417 McT	113	474 Strawberry Tree Computers	192
* Computer Plus	181	356 Mega-Byte	153	82 Strictly Software	22
* Commsoft	137	430 Micro Analyst Inc.	185	292 Strobe Inc.	91
432 Consumer Software	97	208 Micro City/Pace Systems	181	156 Sublogic Communications Corp.	73
269 Coosol Inc.	159	352 Micro Design	191	450 Summa Software Corp.	182
163 Core Concepts	188	464 Micro Lab	182	222 Sweet Micro Systems	56, 57
467 Counterpoint Software	183	245 Micro Management Systems	160	10 Synetix Micro Products	93
465 Courseware	182	414 Micro Mania	186	370 Synetix Micro Products	103
348 Craftsbury Software	133	204 Micro Works	183	297 Syntauri Corp.	53
455 Cross Educational Software	180	329 Microtek	62	25 Texprint	149
418 Dark Star Systems	157	371 Micro-Sci	107	421 Tid Bit Software	77
485 Datacue Inc.	184	483 Micromate Accessories	186	76 Timecor	85
478 Datasouth Computer Corp.	192	490 Micromax Systems Inc.	184	278 Titan Technologies	29
332 David Data	169	262 Mid America Wholesalers	84	265 Transtar	33
3 Dennison Computer Supplies	CIV	* Mind Systems	116	150 Trutec Software	48
367 Digital Images	153	479 Mobile-Tronics	189	402 TSK Electronics	65
116 Disk-of-the-Month Club	188	96 Nibble	121	471 TSK Electronics	184
138 Diskette Connection	181	177 Nibble	123	116 Unlimited Software Inc.	188
308 Diversified Software Research	151	380 Nibble Notch	109	264 Utilico Software	128
247 Dorsett Educational Systems	19	387 Nikrom Technical Products	143	* Wayne Green	
215 East Side Software Company	167	310 Northeastern Software	147	110 Low Cost Costing	131
* Easy Access/Margrace	79	407 NRI Schools	95	Shelf Boxes	194
362 Eastcoast Software	161	85 ohm Electronics	39	489 Wholesale Tech	190
109 Electrovalue Industrial	162	226 Omega Microware	49	460 Xerox Education Publishers	178
463 Electronic Arts	178	477 Omnium Corporation	186	454 Zephyr Services	180
404 Elek-Tek	118	5 Orange Micro	12, 82, 83	491 Ziyad Inc.	184
468 Epson America	188	208 Pace Systems/Micro City	181	190 Zoom Telephonics	179
126 Excalibur Technology	13	482 Pacific Computer Accessories	190		
339 Exec Software Inc	169	31 Pacific Exchanges	122		

*This advertiser prefers to be contacted directly.

For further information from our advertisers, please use the Reader Service card.

Keywiz VIP

One of the first problems most users of computers run up against is the fact that the human-to-computer interface is a keyboard. The typewriter keyboard has to be one of the most inhumane devices ever invented.

Then, to make things worse, a language is invented which includes statements like "A5\$ = STR\$(VAL(MID\$(U1\$(4,5), TR%, LEN(U1\$) - 2)))". My hands almost hurt after a bout with this kind of typing. There is also some commercial software featuring commands with no obvious connection to the function to be performed. For instance, WordStar uses control codes for all of its commands.

Now to help with all these problems and others comes a product from Creative Computer Peripherals called Keywiz VIP (Very Intelligent Peripheral). It is a keyboard with 31 programmable keys that plugs into Apple II, II Plus or Franklin Ace computers. But not just 31 keys are available. There is a shifted set available by pressing the shift key, making 62 keys available. But wait a minute! You can call up four dif-

ferent keyboards from internal memory for a total of 248 user-programmable function keys.

An LED display tells you which of the four keyboards you are using. A step key allows you to rotate through the different keyboards. A shift-lock key is used to lock in the shifted set; again, an LED indicates whether you are using the shifted or unshifted set.

The major difference from other external keyboards is that the Keywiz VIP is user-programmable. You can designate a program key to be any eight keystrokes on the Apple keyboard. The programmed functions keys never forget. The Keywiz uses an EEPROM (Electrically Erasable Programmable Read Only Memory) to store what you put in it. When you turn the power off you do not lose anything.

Installation takes about ten minutes. There is a small calculator-style power supply that plugs into a wall socket to provide power for the Keywiz. Keywiz requires no software and no memory space in the computer. The unit has its own microprocessor and software to take care of everything.

Programming the function keys is no problem. Press the program key

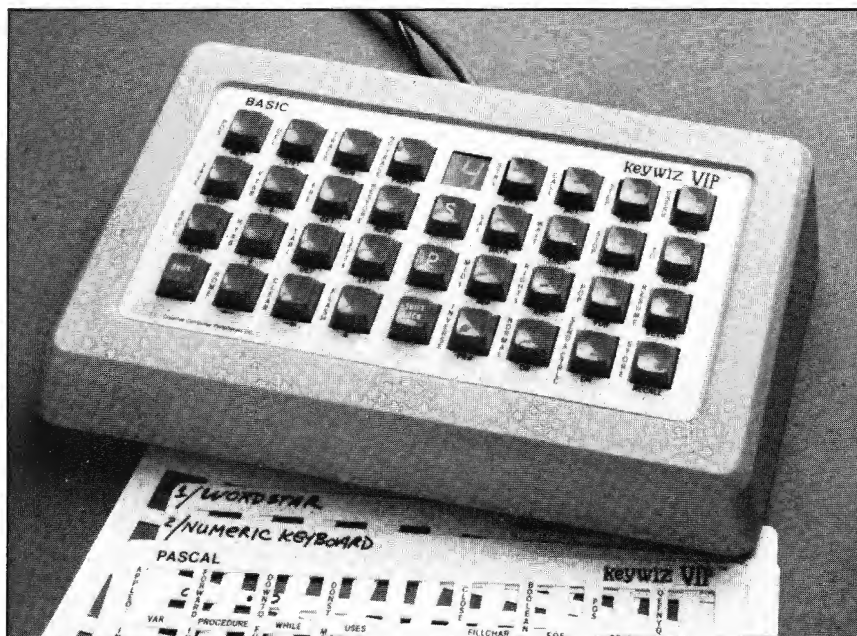
on the Keywiz. Press the function key you wish to program. Type the characters for the function on the Apple keyboard (up to eight characters). Press the program key again. That's it! The function key remembers what you typed.

Now you can program the Keywiz to do the hard stuff for you. If you want to have a key that types CHR\$(just put it in. You can program four keys with the ESC A, B, C and D. For complete cursor movement control HOME and CATALOG keys are useful. I have a line I type for listing a program on the printer that I use a lot when developing a program. It consists of "PR#1";"80N";LIST;"PR#0" and a return. I always seem to make mistakes or forget the control-D or control-I. I programmed four keys on the Keywiz that I press in succession to type the above command.

The unit comes with preprinted templates for Basic and Pascal and two blank ones on which you can write your own arrangements with a pencil or felt tip pen. Additional templates are available from the manufacturer at \$10 for four. This actually gives you eight templates since you can use both front and back.

Sounds great, but does it save you any time? If you are like me and have spent years at an Apple keyboard and can type at 40 wpm, it does not save a whole lot. One of the reasons is that you must remove your hands from the Apple keyboard to find a function key. Then you must move your hand back and find the home keys again. Personally I found that there was little time saved executing things like HOME, LIST, LOAD or SAVE. There was some time saved for things like CHR\$(, RIGHT\$(, LEFT\$(and similar commands that required multiple shifts. If you use the hunt-and-peck system of typing this kind of keyboard is valuable, especially if you are typing something which requires a lot of key shifts.

When used with commercial software there can be a considerable advantage. You can program all of WordStar's control character functions and label them in English.



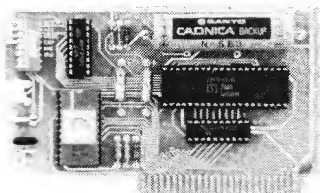
Close-up of the Keywiz VIP keyboard.

APPLIED ENGINEERING Quality Starts On The Drawing Board....

But it doesn't end there. Our commitment to excellence applies all the way down the line, through manufacturing and testing to our three year no-hassle warranty. The aim, of course, is to provide you with the best designed and best crafted hardware available. Try any of the peripherals below and see what it's like to own the finest.

The TIMEMASTER Finally, a clock that does it ALL!

Automatically date stamps files with PRO-DOS



Fully PRO-DOS compatible

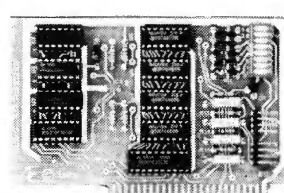
- Just plug it in and your programs can read the year, month, date, day, and time to 1 millisecond! The only clock with both year and ms.
- A rechargeable NiCad battery will keep the TIMEMASTER running for over ten years.
- Powerful 2K ROM driver — No clock could be easier to use.
- Full emulation of most other clocks, including Mountain Hardware's Appletime (but you'll like the TIMEMASTER mode better).
- Basic, Machine Code, CP/M and Pascal software on 2 disks!
- Eight software controlled interrupts so you can execute two programs at the same time (many examples are included).
- On-board timer lets you time any interval up to 48 days long down to the nearest millisecond.

The TIMEMASTER includes 2 disks with some really fantastic time oriented programs (over 25) plus DOS data so it will automatically add the date when disk files are created or modified. The disk is over a \$200.00 value alone — we give the software others sell. All software packages for business, data base management and communications are made to read the TIMEMASTER.

If you want the most powerful and the easiest to use clock for your Apple, you want a TIMEMASTER.

PRICE \$129.00

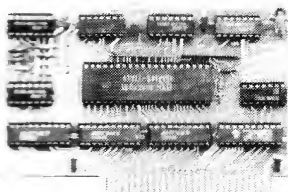
Super Music Synthesizer Improved Hardware and Software



- Complete 16 voice music synthesizer on one card. Just plug it into your Apple, connect the audio cable (supplied) to your stereo, boot the disk supplied and you are ready to input and play songs.
- It's easy to program music with our compose software. You will start right away at inputting your favorite songs. The Hi-Res screen shows what you have entered in standard sheet music format.
- Now with new improved software for the easiest and the fastest music input system available anywhere.
- We give you lots of software. In addition to Compose and Play programs, 2 disks are filled with over 30 songs ready to play.
- Easy to program in Basic to generate complex sound effects. Now your games can have explosions, phaser zaps, train whistles, death cries. You name it, this card can do it.
- Four white noise generators which are great for sound effects.
- Plays music in true stereo as well as true discrete quadraphonic.
- Full control of attack, volume, decay, sustain and release.
- Will play songs written for ALF synthesizer (ALF software will not take advantage of all our card's features. Their software sounds the same in our synthesizer.)
- Our card will play notes from 30HZ to beyond human hearing.
- Automatic shutoff on power-up or if reset is pushed.
- Many many more features.

PRICE \$159.00

Z-80 PLUS!



- TOTALLY compatible with ALL CP/M software.
 - The only Z-80 card with a special 2K "CP/M detector" chip.
 - Fully compatible with microsoft disks (no pre-boot required).
 - Specifically designed for high speed operation in the Apple IIe (runs just as fast in the II+ and Franklin).
 - Red "CP/M WORKING" LED indicator, the Z-80 Plus does not interfere with non-CP/M programs.
 - A semi-custom I.C. and a low parts count allows the Z-80 Plus to fly thru CP/M programs at a very low power level. (We use the Z-80A at fast 4MHz.)
 - Does EVERYTHING the other Z-80 boards do, plus Z-80 interrupts.
- Don't confuse the Z-80 Plus with crude copies of the microsoft card. The Z-80 Plus employs a much more sophisticated and reliable design. With the Z-80 Plus you can access the largest body of software in existence. Two computers in one and the advantages of both, all at an unbelievably low price.

PRICE \$139.00

Viewmaster 80

There used to be about a dozen 80 column cards for the Apple, now there's only ONE.

- TOTALLY Videx Compatible.
- 80 characters by 24 lines, with a sharp 7x9 dot matrix.
- On-board 40/80 soft video switch with manual 40 column override
- Fully compatible with ALL Apple languages and software—there are NO exceptions.
- Low power consumption through the use of CMOS devices.
- All connections on the card are made with standard video connectors.
- All new design (using a new Microprocessor based C.R.T. controller) for a beautiful razor sharp display.
- The VIEWMASTER incorporates all the features of all other 80 column cards, plus many new improvements.

	PRICE	BUILT IN SOFTWARE	SHIFT KEY SUPPORT	LOW POWER DESIGN	THREE YEAR WARRANTY	79 DOT MATRIX	LIGHT PEN INPUTS	40 COLUMN OVERRIDE	INVERSE CHARACTERS
VIEWMASTER	169	YES	YES	YES	YES	YES	YES	YES	YES
SUPRTERM	MORE	NO	YES	NO	NO	NO	NO	YES	YES
WIZARD80	MORE	NO	NO	NO	NO	YES	NO	YES	YES
VISION80	MORE	YES	YES	NO	NO	YES	NO	NO	NO
OMNIVISION	MORE	NO	YES	NO	NO	NO	NO	YES	YES
VIEWMAX80	MORE	YES	YES	NO	NO	YES	NO	NO	YES
SMARTER	MORE	YES	YES	NO	NO	NO	YES	YES	NO
VIDEOTERM	MORE	NO	NO	YES	NO	YES	YES	NO	YES

The VIEWMASTER 80 works with all 80 column applications including CP/M, Pascal, WordStar, Format II, Easywriter, Apple Writer II, VisiCalc, and all others. The VIEWMASTER 80 is THE MOST compatible 80 column card you can buy at ANY price!

PRICE \$169.00

- Expands your Apple IIe to 192K memory.
- Provides an 80 column text display.
- Compatible with all Apple IIe 80 column and extended 80 column card software (same physical size as Apple's 64K card).
- Can be used as a solid state disk drive to make your programs run up to 20 times FASTER (the 64K configuration will act as half a drive).
- Permits your IIe to use the new double high resolution graphics.
- Automatically expands Visicalc to 95 K storage in 80 columns! The 64K config. is all that's needed, 128K can take you even higher.
- PRO-DOS will use the MemoryMaster IIe as a high speed disk drive.

MemoryMaster IIe 128K RAM Card

- Lowest power consuming 128K card AVAILABLE.
- Complete documentation included, we show you how to use all 128K.

If you already have Apple's 64K card, just order the MEMORYMASTER IIe with 64K and use the 64K from your old board to give you a full 128K. (The board is fully socketed so you simply plug in more chips.)

MemoryMaster IIe with 128K	\$249
Upgradeable MemoryMaster IIe with 64K	\$169
Non-Upgradeable MemoryMaster IIe with 64K	\$149

Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products work in the APPLE IIe, II+, II+ and Franklin. The MemoryMaster IIe is IIe only. Applied Engineering also manufactures a full line of data acquisition and control products for the Apple; A/D converters and digital I/O cards, etc. Please call for more information. All our products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle **THREE YEAR WARRANTY**.

All Orders Shipped Same Day
Texas Residents Add 5% Sales Tax
Add \$10.00 If Outside U.S.A.
Dealer Inquiries Welcome

Send Check or Money Order to:
APPLIED ENGINEERING
P.O. Box 470301
Dallas, TX 75247

Call (214) 492-2027
7a.m. to 11p.m. 7 days a week
MasterCard, Visa & C.O.D. Welcome
No extra charge for credit cards

The manual gives sample arrangements for VisiCalc, WordStar, Magic Window and Apple Writer II. It is easy to include a numeric keypad with your VisiCalc functions. You can program your favorite numeric keypad arrangement for entering numbers into any program. It could be a great timesaver in an office that does a lot of that sort of thing. You could even have different function key arrangements for different operators of the same piece of software. This is one of those frustrating products you just hate because the major limitation is your imagination.

There were a few things I didn't like. When I got it out of the box the red filter over the LED readout had broken off and was rattling around in the case. The mounting method was rather flaky and I think Keywiz will have a problem with this.

The wall transformer gets very hot, so hot I can hardly hold my finger on the case. For long life of the transformer, this is not a good situation. However, I would rather have the heat outside the Apple case than inside cooking all those Apple boards. It helps keep the load off the Apple power supply.

One of the connectors on the I/O board was so tall that it interfered with the board in the next slot. There

is, I feel, little excuse for this.

To use the shifted keys is sometimes a two-handed operation. You can use the shift-lock but that increases the number of keystrokes. Another problem is that the keyboard is about the same width as the Apple

"You can program your favorite numeric keypad arrangement for entering numbers into any program."

keyboard and takes up a lot of room on the desk.

The keys are so tall that the labels on the template hide behind them and thus you either have to lean over the keys to see the label or tilt the Keywiz up.

Overall I must give the Keywiz an above average rating. It is easy to program and use. It requires no Apple resources other than a peripheral slot. The manual is adequate. The quality of construction is average to good.

Since I program mostly in Basic and assembly language and am a touch typist, I found I did not use it

that much. If you only use your Apple for Basic, a typing course may be a better deal. But for a non-typist this unit will quickly become a favorite.

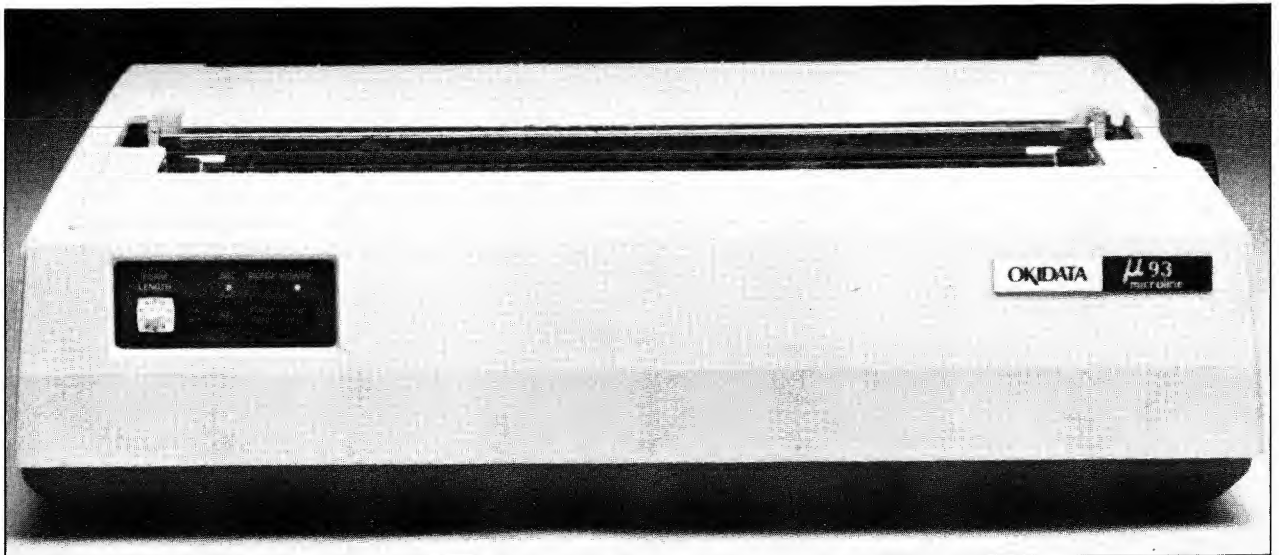
The Keywiz VIP is available from Creative Computer Peripherals Inc., Aztec Environmental Center, 1044 Lacey Road, Forked River, NJ 08731. The price is \$439 plus shipping. ■

Lee Sumner
Dallastown, PA

Microline 93

The Okidata Microline 93 is a dot matrix impact printer—one that forms printed characters by striking tiny wire-ends against paper with an inked ribbon between. By printing a pattern or matrix of such tiny dots on the paper, it forms letters, numbers and other symbols. You can even program Bit to print foreign alphabets or other special characters or graphic patterns.

The 93 accepts paper up to 15 inches wide, or 16 inches with perforations. This enables it to print up to 136 characters per line at 10 cpi (characters per inch), 163 at 12 cpi, or 233 at 17 cpi. You select which of these pitches you want by sending special characters to the printer di-



The Okidata Microline 93 Printer.

WILDCARD

Make back-up copies of protected software quickly, easily, with just a push of a button.

Now! Three different models of the leading copy card. One is right for you.

WILDCARD \$109⁹⁵

WILDCARD 2 \$139⁹⁵

WILDCARD PLUS \$169⁹⁵

Wildcards are the copycards that stack the deck in your favor. Rather than copying protected disks track by track like the old "nibble copiers," Wildcards ignore the disk and any copy protection on it. Instead, Wildcards take a snapshot of your Apple's memory. This creates an accurate copy of the original program.

WILDCARD

Our original. Perfect for the Apple II + ® with 64K. Over 10,000 satisfied customers.

- Wildcard copies both 48K and 64K programs.
- Wildcard creates DOS 3.3 compatible, autobooting copies.
- 40 column text screen dump.
- Files can be placed on a hard disk.
- Wildcard Utility Disk (included) contains: Automatic program compression and BRUN filemaker, Applesoft recover program—makes locked up Applesoft programs listable. Print graphics screen.

WILDCARD 2

Designed for the Apple IIe® with 64K or 128K.

- Fast! Copies 64K programs in 25 seconds, 128K programs in 50 seconds.
- New, self-prompting software. Absolutely no technical expertise is required.
- Text screen dump has been enhanced to print 40 or 80 columns.
- Utility Disk is included for making BRUN files.

IMPORTANT NOTICE: WILDCARDS are offered for the purpose of enabling you to make archival copies only. Under the Copyright Law you, as the owner of a copy of a computer program, are entitled to make a new copy for archival purposes only and the WILDCARDS will enable you to do so. WILDCARDS are offered for no other purpose and you are not permitted to utilize them for any other use, other than specified. Software is not copy protected.



WILDCARD PLUS

The most powerful utility card you can buy for your Apple. A 6502 microprocessor makes Wildcard Plus the ultimate copy and utility card.

Copycard features:

- Lightning fast. Copies 64K software programs in 10 seconds, 128K software in 20 seconds. Copying software is simple, elegant and flexible.
- You can control the Apple's softswitch settings...

Utility card features:

- 4K of RAM on the Wildcard Plus is used to upload powerful Utilities from disk. These utilities include an enhanced monitor that allows you to make program changes and fix program bugs. Another is a screen dump of text and graphics. And more...

Order by phone, (212) 505-5470 or complete the coupon below and send your check, money order, Visa or MasterCard No. to East Side Software Co., 175 Fifth Avenue, Suite 3375, New York, NY 10010. Dealer inquiries welcome.

Please send (indicate quantity)

_____ Wildcard(s) \$109.95 each. \$ _____

_____ Franklin 1000/1200 owners require mod kit. \$8.00 \$ _____
(For use with Wildcard only.)

_____ Wildcard 2(s) \$139.95 each. \$ _____

_____ Wildcard Plus(s) \$169.95 each. \$ _____

On purchases add \$4.00 shipping and handling. \$ _____

New York State residents add sales tax. \$ _____

☐ Check enclosed ☐ Visa ☐ MasterCard Total \$ _____

Card No. _____ Expires _____

Name on Card _____

Name _____

Address (UPS delivery) _____

City _____ State _____ Zip _____ Phone _____

East Side Software Co., 175 Fifth Avenue, Suite 3375, New York, NY 10010

System requirements: Wildcard: Apple II + w/64K, Apple IIe, Wildcard 2: Apple II, II +, IIe, Wildcard Plus: Apple, II, II +, IIe. All cards work with Franklin computers. An \$8.00 mod kit is required for Franklin 1000, 1200 (for use with Wildcard only).

Wildcard, Wildcard 2 and Wildcard Plus are trademarks of East Side Software Co.
© 1983 East Side Software Co.

rectly from the keyboard or from a running program. Sending ASCII character number 30 to the printer, for example, selects 10 cpi.

There is a Double-Width mode available for each character pitch, so that you can specify five, six or eight and one half cpi for headings and special emphasis. While you cannot change the basic, single-width pitch in the middle of a printed line (say, from 10 to 12 cpi), you can switch between a given pitch and its double-width mode within a line. Thus, you can print most of a line at 12 cpi, but emphasize one or more words by printing them at six cpi. Keep in mind that your program must be able to send the proper commands to do this; some word processors, for example, do not allow such embedded commands.

The 93 offers you a variety of printout qualities suitable for different applications. For quick listings and rough drafts, it offers a Data Processing mode that spews out characters at 160 per second. In this mode, it forms the characters using a 9 by 9 dot matrix. Although you can clearly see that the characters are made of dots, they are readable.

You can get more solid characters at half the speed of the Data Processing mode by selecting the Enhanced or Emphasized mode. In these modes, each line of characters is printed twice: first as the printhead travels in one direction, and a second time as it travels back in the other direction. In both modes, the second printing is not directly on top of the first; it is slightly offset.

In the Enhanced mode, the printer advances the paper half a dot between printings. This makes the vertical lines within characters look more solid. In the Emphasized mode the paper does not advance, but the line is reprinted a half-dot's distance to the right of the first printing. This tends to make the horizontal lines look more solid. The two effects are slightly different, but both improve the print quality, making it darker and more solid. If you look closely, however, you can still see rounded

portions of the dots that form the characters.

Finally, for the best looking printout you can select Correspondence mode printing at 40 characters per second. In this mode, as in the Emphasized and Enhanced modes, the printhead goes over each line twice. In this case, however, both passes are in the same direction for maximum precision.

The characters printed in Correspondence mode are formed using a 9 by 17 matrix of dots. They look a bit more elegant than those printed in the other modes, with serifs added to make them less boxy. You have to study closely to see where individual dots are printed on the paper. However, you can see a raggedness to the lines that some typewriter-quality characters don't have.

The quality of the characters in Correspondence mode is excellent for a dot matrix printer. It should be acceptable for all but formal business use. The characters do look a bit thick, but this is the trade-off necessary to make them look so solid.

In addition to printing all the normal English characters, the Microline 93 also prints nine alternative sets of characters: British, German, French, Swedish, Danish, Dutch, Norwegian, Italian, and Radio Shack TRS-80. (What, you've never heard of the Duchy of Grand 80?) The 93 will print any character you can design with a 9 by 9 pattern of dots. It has some built-in RAM you can program with your own character set. There's no utility that helps you do that *easily*, but a reasonably good Basic programmer should be able to write one without too much trouble. The technical information needed to download such characters into the printer's memory is included in the user manual.

In addition to printing discrete characters in 9 by 9 matrices, you can also print graphic images with a resolution of 60 by 60 or 72 by 72 dots per inch—if you buy or write the appropriate software. The user manual describes how the printer translates a byte of data into a column of dots on

the printout and how you enter and leave the Graphics mode. But you can't just issue a command and have the contents of your hi-res graphics screen dumped out on paper. You need software to use the printer's graphic abilities in any practical way.

The user manual is quite good; it is clear, succinct and well organized. It provides concrete examples that clarify general instructions, and a quick reference guide is included. The manual does not assume that you are already a printer expert. It covers all the necessary territory without serious omissions.

The 93 has a variety of intelligent features I haven't yet mentioned. Using these features, you can select and deselect the printer, print subscripts and superscripts, and print underlined characters directly from the keyboard or under control of your software. You can also set the form length to any number of lines; set interline spacing by 144ths of an inch, up to 127/144 inch; set inter-character spacing by 120ths of an inch, up to 9/120 inch; set the left margin and up to 16 horizontal tab stops, either by character column or by dot column; move the printhead to any horizontal dot-column position between the margins; and program up to 12 different sets of vertical tab stops at once, with as many as 54 tab positions altogether.

Okidata claims the printhead is good for 200 million characters. They also claim the MTBF (mean time between failure) is 4000 hours. After doing a little arithmetic, I concluded that those two figures seem to say approximately the same thing. If you use this machine for an hour a week, it shouldn't need repair for about 4000 weeks, or 77 years. If you use it an hour every day, that still gives you about 11 years of smooth sailing. Accurate claims? I can't say. But the quality does look good.

The 93 accepts either cut sheets of paper or continuous paper with perforations. The tractor-feed mechanism used with perforated paper is a separate attachment that snaps on

B.I.S. Instant Information is Power

GENERAL LEDGER ON LINE

Instant Posting - Immediate Reporting

POWER to make fast, efficient management decisions. POWER to adjust to fluctuations in sales. POWER to increase productivity and profits.

B.I.S. is more than just a general ledger... it's business information system that can produce selected business activity reports immediately.

B.I.S. IS FAST

- Machine language saves time... accepts 3000 entries a day as fast as you can type. Every entry is saved for selective analysis.
- Instantaneous posting - 40 split entries can be completely posted in less than 20 seconds.
- Immediate reporting - within four minutes of any entry, a complete BALANCE SHEET, P&L, or DETAILED SELECTIVE ANALYSIS REPORT reflecting that entry can be printed and reviewed.

B.I.S. IS FLEXIBLE

- Define your own Journal Names, Account Prompts, Activity Codes, Custom Report Generators, Account Ranges and Descriptions.
- A single B.I.S. General Ledger handles THREE completely separate sets of books with consolidating capabilities.

B.I.S. IS EASY TO USE

- Menus are simple.
- Accounts and Journals are already set up.
- Hand-holding Tutorial Manual outlines every key stroke.

Put the power of B.I.S. to work for you.

B.I.S. is available from your local Apple dealer for \$299. If he's out of stock, have him give us a call at (214) 341-1635 or write:

John Broderick, CPA
Broderick & Associates
 8635 Shagrock
 Dallas, Texas 75238

TermExec puts your Apple on line

The most versatile communications package in the world, is the easiest to use

Apple II +, 80 column emulation
 Apple IIe, 80 column support
 most modems to 1200 baud
 disk drive and 48 K RAM
 support for OEMS
Trademark of Apple Computers, Inc.

TermExec talks to all hosts • full printer support • full screen editor • unattended long file capture • backscrolling easy to build macros • 70 page manual 30 day satisfaction guarantee • user hot line order now 79.95 MasterCard, Visa 617-862-3170

- transmission error check
- DELPHI membership
- automatic operation
- keyboard expansion
- EXEC commands
- file conversion
- roll back text
- auto answer

EXEC SOFTWARE, INC. 201 Walnut Street Lexington, MA 01873

free brochure or, to pay by check

Circle 332 on Reader Service card.

New DAVID-DOS II™ Compared With Other DOS's

Now you can speedup Text-file handling two ways

DAVID-DOS II is a new edition of DAVID-DOS with added speed, commands, and features. New Read, Write and Save routines are high speed. DAVID-DOS II updates full disks like Apple's Master Create. (The programs on your disks are not touched). DAVID-DOS II Inits blank disks with Basic, Binary or Exec HELLO in seconds. Ten new commands operate identical to existing DOS commands. Use them from the keyboard or in Basic programs. They accept A & L parameters.

Ten New DOS Commands

1. TLOAD speed loads all Text Files, random or sequential, to ram.
2. TSAVE speed saves all Text Files, random or sequential, from ram.
3. TLIST Lists all Text Files, random or sequential to screen/printer.
4. DUMP Memory to screen/printer in Hex with Ascii on right side.
5. DISA disassembles Binary to screen or printer.
6. AL prints last loaded program Address & Length in decimal & hex.
7. HIDOS moves DOS to Language Card & continues operation of program.
8. / is a one keystroke Catalog in addition to the original command.
9. DATE prints with any clock. Also File Dating with clock or manual.
10. FIND prints address's of hex found in 64k memory. Hidios cmd only.

Compatible

All DOS entry addresses have been preserved. DOS is original length and compatible with most software. David-Dos II is copyable and creates fully copyable updated disks. DAVID-DOS II is licensed by programmers for inclusion in the software they sell Init areas were used for David-Dos II. Works with all Apple IIs including IIe 80 Col, Franklin & Hard Disks, such as Corvus & Xebec. Requires 48K. Complete documentation for screen or printing and many utilities are on the disk.

All times in seconds. (Time Test programs available)		DAVID DOS-II	ProDOS	DIVERSI DOS	DOS 3.3
TEXTFILES (100 Sectors) (791 Strings, 32 chars ea) (442 Sectors, 7 x 500)	TSAVE	8.0	NO	NO	NO
	TLOAD	6.2	NO	NO	NO
	WRITE	29.3	28.0	29.4	88.4
	READ	24.3	16.3	24.3	83.8
	PRINT/READ	44.2	45.9	45.1	117.1
	APPEND	142.3	142.9	151.1	1231.2
APPLESOFT (100 Sectors)	*SAVE	7.1	16.4	6.4	33.1
	LOAD	5.0	4.0	5.0	23.5
INTEGER (100 Sectors)	*SAVE	7.3	NO	6.6	33.4
	LOAD	4.9	NO	4.9	23.4
BINARY (100 Sectors)	*BSAVE	7.8	18.4	7.3	28.7
	BLOAD	5.8	4.8	5.8	24.5
48K PROGRAM SPACE (With 3 Bufs avail)	APPLESOFT	36,352	NO	36,352	36,352
	INTEGER	36,352	NO	36,352	36,352
	BINARY	36,352	34,816	36,352	36,352
64K PROGRAM SPACE (With 5 Bufs avail)	APPLESOFT	46,592	31,232	45,658	35,162
	INTEGER	46,592	NO	35,162	35,162
	BINARY	46,592	40,704	45,658	35,162
NUMBER OF DOS COMMANDS		37	29	31	28
CLOCK FILE DATING		YES	YES	NO	NO
MANUAL FILE DATING		YES	NO	NO	NO
ONE KEYSTROKE CATALOG		YES	NO	YES	NO
AUTO USE INTEGER CARD ANY SLOT		YES	NO	NO	NO

Each Program was tested twice W/Apple Clock Card on a newly formatted disk containing DOS.
 *Add 5 seconds for Verify. Apple II, Applesoft & ProDOS are trademarks of Apple Computer

To Order: Send Check or Phone Visa/MasterCard.

Add \$2.00 Shipping. Overseas add US \$4.00
 Calif. add 6%. All orders airmailed.

\$39.95

DAVID DATA™

12021 WILSHIRE BLVD., SUITE 212C
 LOS ANGELES, CA 90025 (213) 478-7865

and off. That's not too much of a nuisance because installation or removal takes only a few seconds once you get the knack. You can feed paper either from the back or from the bottom.

Feeding the printer individual sheets of paper is not easy. In order to route the top edge of the paper under the paper bail (the spring-loaded rollers that hold it against the platen), you *must* lift off the top cover of the printer. That's not hard, but it's a nuisance. There should be guides that keep the paper close enough to the platen to slip between it and the bail.

The top edge of individual sheets also tends to jam against a metal bar when printing the first few lines on a sheet. When this happens, the moving printhead catches on the wrinkled paper and rips it from edge to edge. The solution is to leave the top cover off and allow the first few

lines to print with the paper bail released until the top edge of the paper gets past the metal bar. Then you can let the bail press against the paper for the rest of the sheet.

Changing the ribbon is a messy business, although there is some compensation for your dirty fingertips. The compensation is that the ribbons—open spools and not specially made cartridges—are cheap. But the ribbon stretches along the entire length of the platen and then back to the center where the spools are mounted. The spools do not move along with the printhead, but are fixed behind it. Consequently, it is easy to touch the ribbon while you change it and sometimes while you load paper or adjust the bail.

The front panel controls are fairly standard, with the welcome addition of the form-length switch. This is a lifesaver for anyone who regularly

uses two or more forms of different lengths. The other panel controls set the top-of-form and feed the paper a single line. Holding the linefeed button while powering up also initiates a self-test where the printer continuously prints characters until you press the formfeed button. Lights indicate power on, paper out and select/deselect.

In all, the Okidata Microline 93 is a capable and well built printer. It's very fast in its Data Processing mode, and by dot-matrix standards, it produces excellent quality print in its slower Correspondence mode. Okidata has a good reputation, and this printer promises to live up to their name.

Okidata is located at 532 Fellowship Road, Mount Laurel, NJ 08054. Price is \$999. ■

Jon Voskuil
Milford, NH

Circle 141 on Reader Service card.

**NEW
FOR '83**

CRACKING TECHNIQUES

Share the secrets of the world's greatest crackers...

Axe Man, Bozo NYC, Candy Man, Cloneman, Disk Zapper, Lock Buster, Long John Silver, Jim Phelps, Mr. Krac-Man, Red Rebel, Trystan II, Reset Vector, The Woodpecker, Mr. Xerox... and many more!

Study complete tutorials on Boot Tracing, Software Tricks, Non-Maskable Interrupt, Ram

Card Modifications, Hardware Tricks and other tried and true techniques. Discover indispensable tips on over 40 specific programs for Apple users.

Customize your software to suit your *own* needs! Order your copy of **CRACKING TECHNIQUES '83** today. Supplied on disk for Apple Computers.

For faster service, charge your order to
MasterCard or VISA.

\$39.95

Call our toll free number
and ask for **Operator 68**

1-800-824-7888

In California, call 1-800-852-7777



**PIRATES
HARBOR**

PIRATES HARBOR, INC.

P.O. Box 8928, Boston, MA 02114

VOICE: (617) 227-7760 MODEM: (617) 720-3600

Apple is a registered trademark of Apple Computer, Inc.

YES, I want to learn the secrets of *Cracking Techniques '83*.

☐ Enclosed is my check/money order for **\$39.95** (Massachusetts residents add 5% sales tax).

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: () _____



**PIRATES
HARBOR**

PIRATES HARBOR, INC., P.O. Box 8928, Boston, MA 02114

IC-9

R_x Prescribed Treatment

MEDICARD — A small office medical office billing system designed to work with your spread sheet program. Complete private patient billing, instant account status display and AMA universal claim form preparation. For the IBM PC, the Apple II, or the Apple ///. Requires Visicalc (other spread sheet versions soon.) Specify machine. \$249.95 (plus \$4.00 shipping).

MEDICAL BILLING TRAINING SYSTEM — Demo version of our popular standard medical billing, appointment and claim form system. Learn why more offices use CMA medical systems in the comfort of your office. Versions for the Apple II, Apple /// or IBM PC. Versions for hard disk or floppy based systems. Demo cost \$100.00 and include two \$50.00 dollar coupons you may use to purchase CMA goods and services. Call for details on the right system for your sized practice.

CLIENT BILLING SYSTEM — A complete medical billing system you can use to set up a multi practice billing service. Bill for yourself and/or other doctors. Includes private billing, Superbill, claim form preparation and complete reporting. For the Apple II with Smartterm or the Apple ///e with 80 column card.

(619) 365-9718



MICRO COMPUTER DIVISION
55722 SANTA FE TRAIL
Yucca Valley, Ca. 92284

APPLE CASES

A series of studies in the application of Apples to business and other serious stuff.

- CASE 1 -

The importance of a good business card.

THE SITUATION: You have an ordinary Apple I or Apple IIe. You don't have megabucks to spend. You need extraordinary performance from word processing, spreadsheets, data bases, communications and your other applications programs.

QUESTION: How will a new business card help?

ANSWER: Choose your business card from the VISION-80 family of products.

VISION 80 Column Text Card

A sophisticated, easy to use 80 column card rated No. 1 by reviewers around the world.

80 Column Display:

Largest available 9 * 10 dot matrix, giving a superb set of 128 upper & lower case characters, & a crisp set of line/block graphics, with software switching between 40 and 80 column screens.

Compatibility:

Fully compatible with Applesoft BASIC, PASCAL, MICROSOFT CP/M, FORTRAN and ASSEMBLER.
Fully compatible with most quality word processing, spreadsheet, data base and applications programs.

Communications:

Full smart terminal emulation, file transfer & save, and screen print facilities.

Installation:

Installed in seconds into the standard Apple II or IIe, with no hardware or cabling changes for normal Apple operation.
All this and a set of powerful utility programs.

NOW ONLY
\$195.00

VISION-128 128K Memory Expansion Card

A powerful RAM card which increases the available memory space of your Apple II or IIe from 64K to an incredible 192K.

Compatibility:

Fully compatible with all Apple software, and "transparent" to the user.

VisiCalc Enhancement:

Provides all the extra bytes for storing large VisiCalc models in RAM.

Automatic Operation:

Utility programs can automatically activate the card when more RAM memory is required.

NOW ONLY
\$295.00

VISION-VCE VisiCalc Expander PREBOOT DISK

Automatic VisiCalc preboot procedures for both the Apple II & Apple IIe, utilizing VISION-80 VISION-128K

ONLY \$69.00

VISION-AWII Apple Writer II PREBOOT DISK

Automatic APPLE WRITER II preboot procedures for both the Apple II & Apple IIe

ONLY \$69.00

VISION-128 UTIL Utility Program Disk

A large variety of utilities for the expanded 192K memory, including the VISION-DRIVE diskette emulator.

ONLY \$79.00

FOR REAL SAVINGS, BUY A COMBO PACK:

VISION-COMBO PACK VISION-80 + VISION-128 + VISION-VCE

ONLY
\$495!

Action-Research Northwest
11442 Marine View Drive, SW.
Seattle, WA 98146
(206) 241-1645 Source: CL2542

70 INCOME TAX PROGRAMS

(For Filing by April 15, 1984)

APPLE II, II+ and IIe (3.3 DOS, 16-SECTOR)
(Also available for TRS-80's)

FEATURES: —

1. Menu Driver
2. "Save on Disk"
3. BASIC Unlocked Listable
4. Name SS No. F.S. carried over
5. Inputs on screen before printing
6. I.R.S. approved REVPROG format printing
7. Prints entire Form Schedule
8. Calculates Tax etc
9. Use GREENBAR in Indicate — don't change paper all season!
10. Our 5th year in Tax Programming
11. We BACK-UP our programs!

For the Tax Preparer, C.P.A., Lawyer and Individual. 70 Tax Programs on 13-3.3 DOS, 16-Sector disks. Order only the disks you'll use.

Programmed for easy-use. Follow the Form or Schedule closely. Check-points along the way. Results on screen before printing.

70 TAX PROGRAMS include: Forms 1040, 1040A, 1040EZ, 1120, 1120S, 1065 and 1041. Schedules A, B, C, D, E, F, G, R, RP, SE and W. Forms 1116, 2555, 2106, 2119, 2210, 2440, 2441, 3468, 3903, 4136, 4137, 4255, 4562, 4684, 4972, 4797, 5695, 5884, 6251, 6252 and 6765. Order only the disks you need.

Also we have TAX PREPARER HELPER: includes 12 PROGRAMS such as INCOME STATEMENT, RENTAL STATEMENT, SUPPORTING STATEMENT, IRA, ACRS, 1040/ES, ADD W-2's, PRINT W-2's and others.

TRY ONE DISK AND SEE FOR YOURSELF. AP #1 DISK IS \$24.75, POSTPAID.

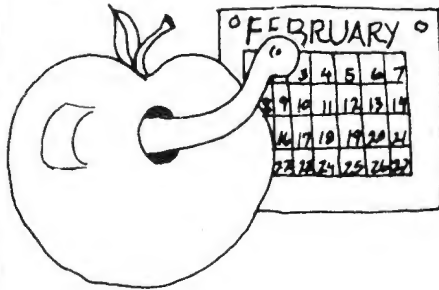


Write:—

GOOTH TAX PROGRAMS

931 So. Bemiston • St. Louis, Mo. 63105

Calendar



January 31-February 3
**Communications Networks
 1984 Conference and Exposition**
 Washington, DC
 contact:
 Louise Myerow
 (617) 444-3946

February 2-4
**Annual Conference on
 Computer Simulations**
 San Diego, CA
 contact:
 Gloria Rico
 Society for Computer Simulations
 PO Box 2228
 La Jolla, CA 92038
 (619) 459-3888

February 6-9
**International Symposium on
 Logic Programming**
 Atlantic City, NJ
 contact:
 Dr. Joseph Urban
 University of S.W. Louisiana
 Box 44330
 Lafayette, LA 70504
 (314) 231-6304

February 7-10
**Instructional Computing
 Conference**
 Orlando, FL
 contact:
 David Brittain
 Florida Dept. of Education
 Knott Bldg.
 Tallahassee, FL 32301
 (904) 487-3105

February 14
Introduction to Computers
 Princeton, NJ
 contact:
 Martin Schneiderman
 Educational Testing Service
 Princeton, NJ 08541
 (609) 734-5607

February 14-16
The Future of Computing
 Philadelphia, PA
 contact:
 Frank Friedman
 Dept. of Computer &
 Information Science
 Room 303
 Computer Center Bldg.
 Temple University
 Philadelphia, PA 19122
 (215) 787-1912

February 14-16
A Look into the Future
 Cedar Rapids, IA
 Yakima, WA
 contact:
 NCTM
 1906 Association Drive
 Reston, VA 22091
 (703) 620-9840

February 15-17
Interactive Instruction Delivery
 Orlando, FL
 contact:
 Raymond G. Fox
 SALT
 50 Culpepper St.
 Warrenton, VA 22168
 (703) 347-0055

February 20-22
Office Automation Conference
 Los Angeles, CA
 contact:
 American Federation of
 Information Processing Societies
 1899 Preston White Drive
 Reston, VA 22091
 (703) 620-8955

February 21-23
**Softcon Trade Fair
 for Software Industry**
 New Orleans, LA
 contact:
 Peggy Kilburn
 Northeast Expositions
 822 Boylston St.
 Chestnut Hill, MA 02167
 (617) 739-2000

February 22-25
**Computers Now!
 The Future is Today**
 New Orleans, LA
 contact:
 James Gardner
 MIS Office of
 Research and Development
 Louisiana Dept. of Education
 3455 Florida Blvd.
 Baton Rouge, LA 70806
 (504) 342-1865

February 25-26
**Computer Supermarket
 Personal Computer Show**
 San Mateo, CA
 contact:
 Richard Fults
 Microshows
 PO Box 4323
 Foster City, CA 94494
 (415) 571-8041

February 28-March 1
COMPCON Spring
 San Francisco, CA
 contact:
 COMPCON Spring
 PO Box 639
 Silver Spring, MD 20901
 (301) 589-8142

February 28-March 2
ACLD International Conference
 New Orleans, LA
 contact:
 Jean Peterson
 ACLD
 4156 Library Road
 Pittsburgh, PA 15234
 (412) 341-1515

February 29-March 3
Computers in the New Curriculum
 Austin, TX
 contact:
 Vicki S. Smith
 TCEA
 PO Box 3573
 Austin, TX 78768
 (713) 462-7708

March 12-16
IEEE International Conference on Robotics
 Atlanta, GA
 contact:
 Robotics
 PO Box 639
 Silver Spring, MD 20901
 (301) 589-8142

March 14-16
Simulation Symposium
 Tampa, FL
 contact:
 R.M. Huhn
 PO Box 37
 Melbourne, FL 32901
 (305) 727-6858

March 15-16
Literacy Plus + Microcomputers in Education
 Tempe, AZ
 contact:
 Ruth Camuse
 College of Education
 Arizona State University
 Tempe, AZ 85281
 (602) 965-7363

March 22-23
West Coast Computer Faire
 San Francisco, CA
 contact:
 Mary Beth Wilson
 181 Wells Ave.
 Newton, MA 02159
 (617) 965-8351

March 24-26
National Educational Computer and Technology Conference
 Chicago, IL
 contact:
 Alan Rosa
 NCECL
 PO Box 293
 New Milford, CT 06776
 (203) 354-7760

March 25-30
International Conference on Software Engineering
 Orlando, FL
 contact:
 71CSE
 PO Box 639
 Silver Spring, MD 20901
 (301) 589-8142

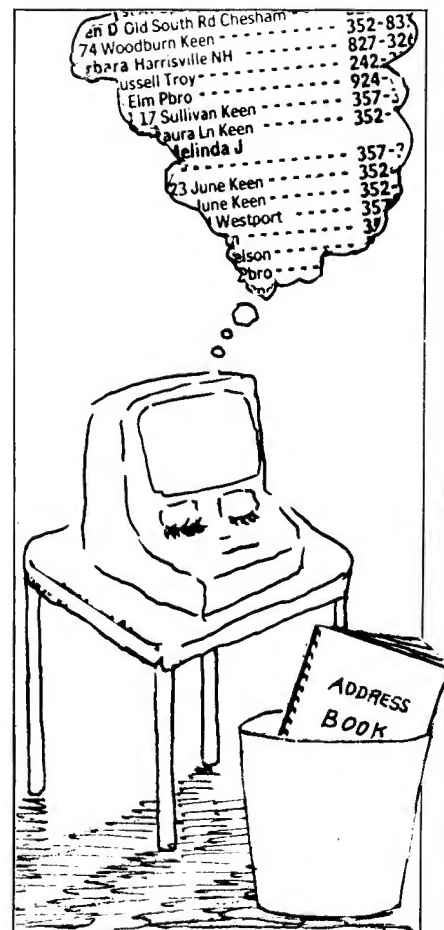
March 26-28
COMDEX in Japan
 Tokyo, Japan
 contact:
 Peter B. Young
 The Interface Group
 300 First Ave.
 Needham, MA 02194
 (617) 449-6600

March 30-April 1
NY Personal Computer Show
 New York City, NY
 contact:
 Kengore Corp.
 PO Box 13
 Franklin Park, NJ 08823
 (201) 297-2526

April 5-7
COMDEX/Winter
 Los Angeles, CA
 contact:
 Peter Young
 Interface Group
 300 First Ave.
 Needham, MA 02194
 (617) 325-3330

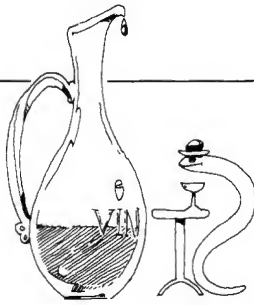
April 28
International Computer Problem Solving Contest
 Kenosha, WI
 contact:
 D.T. Piele
 ICPSC
 Box 2000
 University of Wisconsin/Parkside
 Kenosha, WI 53141
 (414) 553-2327

April 29-May 1
Computerized Investor Workshop
 Chicago, IL
 contact:
 Business and Investment
 Computer Systems
 220 Parkview Road, Dept. C
 Glenview, IL 60025
 (312) 998-0144



If you are organizing, or otherwise know of, an event important to Apple users, and would like it listed in the inCider Calendar, please drop us a line at Pine Street, Peterborough, NH 03458. Include the name of the event, the date, the location, and the name of a contact for further information. —the editors

Cider Vinegar



Firefly Frolic, December

The listing for my "Firefly Frolic" article in the December *inCider* was inadvertently renumbered. The following table gives the correct correspondence between the article and the listing.

Text	Listing
95-100	110-140
120-130	150-170
135-145	180-200
150-155	210-220
160-170	230-250
180-200	270-310
205-315	320-540
320-425	550-770
350	610
430-435	780-790
440-545	800-1010
550-600	1020-1120
605-660	1130-1240
665-710	1440-1530
715-850	1540-1810
855-875	1820-1860
880-885	1870-1880
890-990	1890-2080
995	2110

I have also corrected a smudged DATA statement (line 2110) and a typo (line 1800).

```
2110 DATA 174,0,3,173,48,192,136,208,5,
206,1,3,240,9,202,208,245,174,0,3,76,5,3,96
1800 HLIN 4,6 AT 15: VLIN 15,17 AT 4:
HLIN 4,6 AT 17: VLIN 15,19 AT 6:
COLOR = 13: RETURN
```

I hope this clears up any confusion.

Douglas R. Werner
20 Seymour St.
Torrington, CT 06790

Create-A-Venture, August

I have received a few letters pointing out some problems with my "Create-A-Venture" article that appeared in the August issue. They are easily fixed.

1. On page 93 at the end of the Adventure subprogram, it says that the listing is continued. Not true. The program ends at line 13390.

2. In the Adventure subprogram, there is a misspelling in the "Help" routine. Line 6590 should read: INVERSE: PRINT "INV"; NORMAL: PRINT "ENTORY"; SPC(4); "... (ITEMS IN POSSESSION)";

3. The biggest problem concerns the control-S function used in the Creator subprogram. This is used periodically to save data entered as you go along, thus preventing loss of all your data should an accident occur. It doesn't work due to an error on my part. When control-S is hit, it saves all the data *except* the title information. When you try to recall the unfinished data files, the program first tries to get the title file. When it can't find it, it refuses to load the data file. Luckily, this problem is easily solved. Change these lines in the Creator subprogram:

```
8140 IF DO THEN GOTO 8160
8145 HOME
9030 IF CS = TRUE AND AN$ = CHR$(19)
THEN AN$ = CHR$(13): TS = TRUE:
CK = 0: DO = TRUE:
PROG$ = "" + MPROG$ + ".
TITLE":GOSUB 8160: DO = FALSE
```

I have introduced a new variable here, DO, which stands for Display Off. It prevents any disk messages from being printed to the screen, thus keeping the text intact.

I wish to thank those who have written me in regard to these problems.

Gary Cage
5416 E. Verde Lane
Phoenix, AZ 85018

Converting CP/M Files to DOS, November

Some of the program lines from the November article "Converting CP/M Files to DOS" were badly smudged. Here are the worst.

```
480 T$ = "??":GOSUB 3220: FOR I = 1 TO
300: NEXT: GOTO 445
3040 CALL GIOB: IOB = 256 * PEEK (73)
+ PEEK (72)
```

—the editors

File Card Formatter, October

Several people have contacted me concerning bugs in my "File Card Formatter" article published in the October issue of *inCider*. First, the program hangs when certain characters are entered. To overcome this, insert the following line: 281 IF ASC(L\$) < 32 OR ASC(L\$) > 99 THEN 245. Another problem is trying to erase a control character when that character is the first item on a line. The easiest solution is to turn off the control code rather than trying to erase it.

Also, the length of the shape table is \$393 and not \$392. And if you're having problems controlling the printer with a simple PR#1, then try PRINT CHR\$(4) before it. Finally, you can use File Card Formatter on larger index cards, keeping in mind that there is a limit of 1325 characters per card.

William P. Smith
RD# 2
Cold Spring Creamery Road
Doylestown, PA 18901

inCide Out, December

The *inCider* staff was so busy admiring the photo of itself published in the December issue that it forgot to give proper photo credit. Thank you, S.F. Tomajczyk!

—the editors

inSidious inSolubles Solution, from p. 129

Here is the solution to The Chess Board (Listing 1):

```
30 COLOR= 15: IF (X + Y) / 10 <
> INT ((X + Y) / 10) THEN
COLOR= 0
```

Every good programmer and chess player knows that the lower-right square on a chess board should be *white*.

Finally, a 6502 Assembler that doesn't require a genius to operate.



LISA v2.6

You don't need an I.Q. of 200 to learn assembly language on your Apple II or Apple//e. All you need is the best 6502 assembler around: **Lazer's Interactive Symbolic Assembler (LISA v2.6)**. LISA is the easy-to-learn and easy-to-use system that will have even the absolute beginner up and running in a matter of minutes. In addition to LISA's clearly written 240-page manual more tutorial material is available for LISA than any other assembler (including books by D. Fudge, R. Hyde, W. Mauer, and R. Mottola). LISA is the beginner's best choice.

Even if your I.Q. is 200, you'll appreciate LISA's speed, power, and ease of use. At 20,000 lines/minute it's 20 to 30 times faster than ORCA/M or Apple's own Toolkit assembler. That's why people like Bill Budge, Ken Williams, Brian Fitzgerald, Don Fudge, and Steve Wozniak use it every day. LISA is very usable. That's why it's the most often used assembler ever created for the Apple II.

LISA v2.6 is available for \$79.95 at computer stores everywhere. If your local computer store doesn't have a copy you can order directly from:

Lazerware, 925 Lorna St., Corona, California 91720. (714) 735-1041

LAZERWARE

New Publications

edited by Joan Witham

Educational Catalog

Dolphin Educators offers a selection of high quality educational products—parent-approved software described in detail with the appropriate age given, plus selected hardware suitable for children. Catalogs may be obtained for \$1 from Dolphin Educators, 1718 Sherman Ave., Evanston, IL 60201.

AppleAid

"The Apple II Computer Explained" is a four-part, self-taught, audio visual training program, available in sound/filmstrip, sound/slide and video cassette formats. The program comes with an easy-to-understand study guide and sells for \$219 in the sound/filmstrip format. For further information and prices, contact Bergwall, PO Box 238, Garden City, NY 11530.

The International Software Database

Do you need computer software for launching your own space shuttle, running a funeral parlor or managing a football team? The International Software Database, an on-line database of software information, has all those plus information on over 50,000 software packages for any conceivable application. Address all orders and information requests to Menu, ISD at 1520 South College Ave., Ft. Collins, CO 80524.

Power Up!

Software Publishing Corp. announces its direct-mail catalog, Power Up, featuring personal computer software and accessories for Apple and IBM owners. Products are priced at \$19.95 to \$99.95. To receive your catalog, write Software Publishing Corp., 1901 Landings Drive, Mountain View, CA 94043.

Pocket Guide to CP/M

Addison-Wesley publishes a pocket-sized reference manual for CP/M that sets up by your microcomputer for easy use. You can obtain it for \$7.95 at book stores or from Addison-Wesley, Reading, MA 01867.

MUM

The MicroPro User's Group (MUG) announces the publication of MUM, to offer technical information to its members in easy-to-understand language. Anyone using MicroPro products (integrated software product line running on CP/M based microcomputers) can join this support group and receive the magazine's ten issues for yearly dues of \$36. Contact MUG, 700 Larkspur Landing, Suite 120, Larkspur, CA 94939, for further information.

Entrepreneurs Wanted?

ATC Software's 80-page manual, "How to Profitably Sell Your Own Software," guides programmers in selling their software creations. Information is given on obtaining national directory listings, pricing a software product, writing a user's manual and operating a successful mail order service—all for \$20 from ATC Software, Box 448, Estill Springs, TN 37330.

Programming for Microcomputers

Indiana University Audio-Visual Center has released 13 half-hour video programs (\$1950 or \$150 per title) for use with a textbook, *Programming for Microcomputers: Apple II Basic*, published by Houghton Mifflin for \$15.95. Contact the Audio-Visual Center at Indiana University, Bloomington, IN 47405, for more information.

Circle 374 on Reader Service card.

THE DATA BANK™

All the **POWER** of the High priced data base **WITHOUT THE HIGH PRICE**

EASY enough for the beginner, but powerful for the expert - **VERSATILE** to fit all your needs
USER FRIENDLY and **MENU DRIVEN** with interactive pre-selection for speed and ease

STEP BY STEP - easy to understand user Manual - **UNLOCKED** for customization and backups
COMPATIBLE - uses Conventional Random files - **INTERFACES** with Visicalc* and word processors

POWERFUL - Global math functions **DATA**-easily changed, relocated, or transferred to new files
SORTS - fast, multi level sorts Prints **REPORTS, FORMS, Mail Labels, Checks, Invoices** . .
SEARCHES - 15 types and 100 levels **SIMPLE** and **EASY** - to handle Large files with ease

THE DATA BANK™ - is a complete package no need to buy additional utility packs. Requires **APPLESOFT*** with 48K and at least one disk drive. Price \$170.00 add \$3.00 shipping, Calif. res. add 6% sales tax.



FlowerSoft

564 Tara Court
Manteca, CA 95336 (209) 239-2116

*Applesoft and Visicalc are Trade Marks respectively of Apple Computer, Inc. and Visicorp.

SAVE UP TO 40%

TOLL FREE ORDER LINE

No Hidden Charges
No Charge for Credit Cards
No Shipping Delay for Personal Checks

SAVE!

AVANT-GARDE CREATIONS

Apple IIc Module	
SIR	\$21.00
Apple IIc Module	
SIR	25.00
Apple IIc	21.00

BEAGLE BROTHERS

Apple IIc	\$28.00
Apple IIc Module	21.00
Beagle IIc	21.00
DOS IIc	20.00
Double Talk	25.00
Flex Talk	21.00
Frame Talk	21.00
Print Talk	21.00
Talk IIc	15.00
Talk IIc	15.00
Unit Talk	21.00

BRODERBUND

AE	\$25.00
Apple IIc Module	42.00
Bark IIc	48.00
Crunch IIc	48.00
Gum IIc	42.00
Look IIc	42.00
Made IIc	42.00
Making IIc	48.00
Quack IIc	42.00
Sea IIc	42.00
Serpent IIc	48.00
Spare IIc	48.00
Star IIc	42.00

BUDGECO

Apple IIc	\$28.00
Apple IIc	21.00

CALIFORNIA PACIFIC

Unit IIc	\$28.00
----------	---------

CONTINENTAL SOFTWARE

Apple IIc	\$28.00
-----------	---------

DATAMOST

Apple IIc	\$28.00
Bleed IIc	28.00
Cash IIc	28.00
Complete IIc	21.00
Making IIc	21.00
Missing IIc	21.00
Pig IIc	21.00
Snake IIc	21.00
Swamp IIc	21.00
Thief IIc	21.00

DATASOFT

Canyon IIc	\$21.00
Micro IIc	28.00
Zaxxon IIc	28.00

DATA TREK

Maze IIc	\$28.00
----------	---------

EDU-WARE

Algebra IIc	\$28.00
Algebra IIc	28.00
Compu-Read IIc	21.00
Decimals IIc	28.00
Fractions IIc	28.00
Prisoner IIc	28.00
Rendezvous IIc	28.00

EPYX

Crush IIc	\$28.00
Crunch IIc	28.00
Hellfire IIc	28.00
Temple IIc	28.00

H.A.L. LABS

Sheila IIc	\$20.00
Super Taxman IIc	20.00

HAYDEN SOFTWARE

Go IIc	\$28.00
ORCA IIc	28.00
Sargon IIc	28.00

INFOCOM

Deadline IIc	\$35.00
Starcross IIc	28.00
Suspended IIc	35.00
The Witness IIc	35.00
Zork II, III, & IV IIc	28.00

INTELLIGENT STATEMENTS

Ken Uston's Professional IIc	\$49.00
Blackjack IIc	28.00

LIGHTNING SOFTWARE

Master Type IIc	\$28.00
-----------------	---------

MICROLAB

Miner 2049er IIc	\$28.00
------------------	---------

MICROSOFT

Adventure IIc	\$21.00
Olympic Decathlon IIc	21.00
Typing Tutor IIc	20.00

MUSE

Castle Wolfenstein IIc	\$21.00
Caverns of Freitag IIc	21.00
Robot War IIc	28.00
Three Mile Island IIc	28.00
Titan Empire IIc	28.00

ODESTA

Checkers IIc	\$35.00
Chess 7.0 IIc	49.00
Odin IIc	35.00

OMEGA MICROWAVE

Inspector IIc	\$45.00
Locksmith 4.1 IIc	75.00
Night Falls IIc	21.00
Watson IIc	35.00

ORIGIN SYSTEMS

Exodus: Ultima III IIc	\$40.00
------------------------	---------

QUALITY SOFTWARE

Ali Baba IIc	\$25.00
Bag of Tricks IIc	35.00
Beneath Apple Manor IIc	21.00
Fastgammon IIc	18.00

SENSIBLE SOFTWARE

Sensible Speller IIc	\$100.00
Super Disk Copy IIc	21.00

PENGUIN SOFTWARE

Complete Graphics IIc	
System IIc	\$49.00
Coveted Mirror IIc	15.00
Crime Wave IIc	15.00
Graphics Magician IIc	45.00
Minit Man IIc	15.00
Pensate IIc	15.00
Pie Man IIc	15.00
(The) Quest IIc	15.00
Short Cuts IIc	35.00
Special Effects IIc	28.00
Spy's Demise IIc	15.00
The Spy Strikes Back IIc	15.00
Thunderbombs IIc	15.00
Transylvania IIc	15.00

SIERRA ON-LINE

Adv. #1 Mission IIc	
Asteroid IIc	\$15.00
Adv. #2 Mystery IIc	
House IIc	18.00
Adv. #3 Wizard & The Princess IIc	25.00
Adv. #4 Ulysses IIc	25.00
Adv. #5 Time Zone IIc	70.00
Adv. #6 Dark Crystal IIc	28.00
Apple Cider Spider IIc	21.00
Bob A-Bet IIc	21.00
Cannonball Blitz IIc	25.00
Crossfire IIc	21.00
Dragon's Keep IIc	21.00
Frogger IIc	25.00
Jawbreaker (new) IIc	21.00
Learning w/Leeper IIc	25.00
Marauder IIc	25.00
Sammy Lightfoot IIc	21.00
Softporn Adventure IIc	21.00
Threshold IIc	20.00
Troll's Tale IIc	21.00
Ultima IIc	42.00
The Artist IIc	60.00
Screenwriter IIc	99.00
General Manager IIc	175.00

HARDWARE DEALS

MODEMS

Apple Cat II	\$299.00
Micromodem II	265.00
Micromodem w/terminal prog	295.00
212 Apple Cat	580.00

MONITORS

Amdek	
Color I	\$299.00
Color II RGB	599.00
Color III RGB	399.00
RGB Card	149.00

USI

Pi 1 9" Green	\$119.00
Pi 2 12" Green	149.00
Pi 3 12" Amber	159.00
Pi 4 9" Amber	129.00
Color 1400	299.00

PRINTERS

C. Itoh	
GX-100	\$229.00
Prowriter	399.00
Okidata	
Microline 80	349.00
Microline 82A	449.00
Microline 92	549.00

SILICON VALLEY SYSTEMS

Word Handler/List Handler package	\$75.00
-----------------------------------	---------

SIRIUS

Critical Mass	\$28.00
Epoch	25.00
Gorgon	28.00
Repton	28.00
Plasmania	25.00
Type Attack	28.00
Wayout	28.00

SIR-TECH

Galactic Attack	\$21.00
Knight of Diamonds	25.00
Legacy of Lylgarn	28.00
Police Artist	25.00
Star Maze	25.00
Wizardry	35.00

SOFT IMAGES

Blackjack Strategy	\$49.00
Pandemonium	28.00
Single's Night at Molly's	21.00

SOFTWARE PUBLISHING

PFS: File	\$95.00
PFS: Graph	95.00
PFS: Report	95.00

SPINNAKER

Delta Drawing	\$35.00
Face Maker	25.00
Hey Diddle, Diddle	21.00
Kindercomp	21.00
Most Amazing Thing	28.00
Rhymes & Riddles	21.00
Snooper Troops	
1 & 2 ea.	32.00
Story Machine	25.00

STRATEGIC SIMULATIONS

Bomb Alley	\$42.00
Computer Ambush	42.00
Computer Baseball	28.00
Computer Quarterback	28.00
Cosmic Balance	28.00
Cosmic Balance II	28.00
Galactic Adventures	42.00
Geopolitique 1990	42.00
Germany 1985	42.00
Knights of the Desert	28.00
North Atlantic '86	42.00
RDF '85	25.00
Tigers in the Snow	28.00
Warp Factor	28.00

SUB-LOGIC

Flight Simulator	\$25.00
Pinball: Night Mission	21.00
Road Block	21.00
Saturn Navigator	25.00
Space Vikings	35.00

SYNERGISTIC

Atlantis	\$28.00
Crisis Mountain	25.00
Bolo	25.00
G.P.L.E.	49.00
Microbe	32.00
Odyssey	21.00

SYDNEY DATA PRODUCTS

Evolution	\$28.00
-----------	---------

ULTRASOFT

Mask of the Sun	\$28.00
Serpent's Star	28.00

VISICORP

VisiCalc 3.3	\$175.00
VisiCalc IIc	175.00
VisiDex	175.00
VisiFile	175.00
VisiLink	175.00
VisiPlot	150.00
VisiSchedule	210.00
VisiTerm	75.00
VisiTrend/Plot	225.00

HARDWARE

JOYSTICKS AND PADDLES

Hayes Mach II	\$35.00
Hayes Mach IIIc	40.00
Hayes Mach III	45.00
Hayes Mach IIIc	50.00
Kraft Joystick	45.00
Kraft Paddles	35.00
Sirius Joystick	36.00
TG Joystick	42.00
TG Paddles	29.00
TG Trackball	48.00

MISCELLANEOUS HARDWARE

Grappler +	\$125.00
16K Ram	75.00
SoftCard	275.00
System Saver	65.00

BLANK DISCS (box of 10)

Elephant (SS/SD)	\$22.00
(SS/DD)	25.00
Maxell (SS/DD)	30.00
Verbatim (SS/SD)	25.00
(SS/DD)	28.00
Diskette File Box (holds 60)	20.00

DISK DRIVES

Rana Elite 1	\$289.00
w/controller	389.00
Rana Elite 2	479.00
w/controller	559.00
Rana Elite 3	629.00
w/controller	699.00

VIDEX

Videoterm	\$239.00
Ultraterm	279.00

ADVANCED LOGIC SYSTEMS

CP/M Card	\$299.00
Dispatcher	104.00
Z-Card II	129.00

OTHER ITEMS

Gibson Light Pen	\$249.00
Koala Graphics Tablet	99.00
S.A.M.	89.00

RIISING SUN SOFTWARE

4200 PARK BLVD.

OAKLAND, CALIFORNIA 94602

(415) 482-3391

Ordering Information: We'll accept any form of payment—cash, personal check, money order, VISA/MasterCard, or C.O.D. Send cash at your own risk. Add \$2.00 for UPS shipping; \$3.00 for Blue Label Air. California residents add applicable sales tax. ALL orders shipped same day received. If we are out of stock on a particular item we will include a special bonus with your order when shipped.



CALL TOLL FREE
(800) 321-7770 (Outside California)
(800) 321-7771 (Inside California)



New Software

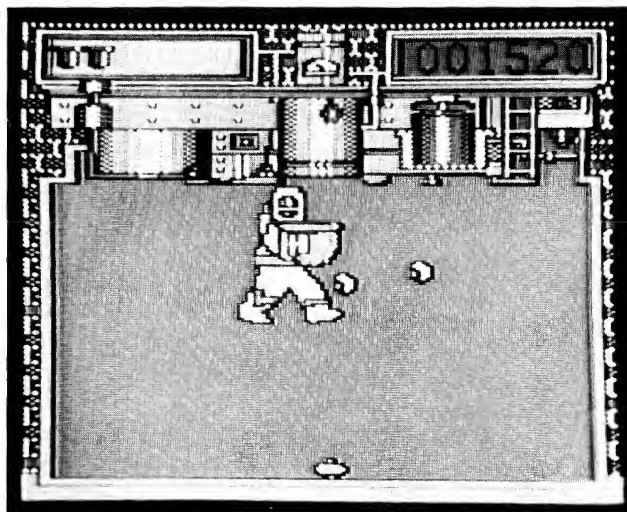
edited by Joan Witham

Stickybear Programs for Kids

Weekly Reader Family Software announces Stickybear Basketbounce, which offers a multi-level game for the entire family to win points by catching colorful bouncing bricks, doughnuts or stars before running out of baskets.

Two programs for children, three to six years old, teach opposites (Stickybear Opposites) and shapes (Stickybear Shapes). All programs retail for \$39.95. Contact Xerox Education Publications, Computer Software Division, 245 Long Hill Road, Middletown, CT 06457, for more information. Reader Service number is 460.

grade data, computes class averages for each item graded, computes final grades, and does many other tasks. It is available for both secondary grades and above (Upper Division) and for pre-secondary teachers (Lower Division) for \$19.95 each from Indian Head Software, 1002 Indian Head Drive, Snow Hill, NC 28580. Reader Service number is 456.



Stickybear Learning Games.

Compose Music

Experienced and inexperienced musicians can compose and play their own music on the Music Construction Set from Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403. Users manipulate an on-screen "hand" with a joystick, keyboard or touch pad to position notes, rests, sharps, flats or other musical symbols on a formatted staff, then can hear how it sounds immediately. Suggested retail price is \$40. Reader service number is 463.

Grades Manager

The Grades Manager provides a head count, creates and maintains a class roster in alphabetical order, adds or deletes a student, enters and edits

The Alpine Encounter

Vodac, a sinister organization, has stolen the plans for the world's first invincible missile. You must recover the plans to avert a worldwide disaster. Vodac, an interactive adventure, features 93 full-color scenes, 28 personalities, sound effects and two-voice music. It is available for \$59.95 from Ibidinc, 179 Allyn St., Suite 6-7, Hartford, CT 06103. Reader Service number is 462.

Keep "My Secret"

This Apple data encryption/decryption program protects any kind of DOS 3.3 file by scrambling entire disks or selected files so they can be read only by entering your password. It is available for \$19.95 from Anthro-Digital Inc., PO Box 1385, Pittsfield, MA 01202. Reader Service number is 451.

Dump Your Apple III

Attach.Driver allows Apple III users to dump a screen full of text from any program to any printer at any time with a single keystroke and no additional hardware. The suggested retail price is \$29.95. Contact Soft-Life Corp., Dept. N, 2950 Los Feliz Blvd., Suite 103, Los Angeles, CA 90039, for further information. Reader Service number is 453.

Stars in Your Computer

Astrocalc is an astronomical program for anyone interested in the sky



Winter adventure in the Alps.

APPLE MODEM. WITH EVERYTHING.

\$129

THE NETWORKER™ MODEM

Your best buy in modem history. The **Networker™**, a plug-in single-slot direct connect modem for the Apple II family of computers. Send electronic mail to a friend or business associate; use your school's computer; access hundreds of computer bulletin boards or thousands of data bases for up-to-the-minute news, sports, weather, airline, and stock information.

There's absolutely nothing else to buy. You get the modem board, communications software, and a valuable subscription to America's premier information service, **THE SOURCE™**. For \$129 it's an unbeatable value.

This is the modem that does it all, and does it for less. The Apple Communications Card is on board, so no other interface is needed. It's 300 baud, the most commonly used modem speed. And it comes complete with **Networker Communications Software** on an Apple-compatible disk, giving you features no modem offers.

Networker Communications Software is an easy to use terminal program that turns your computer into a communications command center, with on-screen "help" menus, continuous updates of memory usage, carrier presence, and communication status. Even a beginner can be communicating in seconds.

The **Networker** supports both originate and answer modes, so you can send and receive information, in full or half duplex modes. Just plug it into any slot in your Apple computer, and then into your phone jack. Now you're part of a vast network of computers.

NETMASTER™ COMMUNICATIONS SOFTWARE

For \$179 we include with the **Networker** our **Netmaster Communications Software** for advanced users. **Netmaster** will let you transfer games, computer graphics, programs, sales reports, documents—in fact, any Apple file of any size—to another computer, directly from disk to disk, without errors, even through noisy phone lines.

For transferring information between computers, **Netmaster's** superb error checking and high speed are an unbeatable combination. With a **Netmaster** on each end, you can transfer information three to five times faster than other communications packages like Visiterm™ or ASCII Express™. Error free.

But **Netmaster's** not stuffy. It will talk to those other communications packages. It's just that they don't work as fast and they don't check errors like **Netmaster**. And **Netmaster** doesn't only work with the **Networker** modem. Even if you already have another modem for your Apple, **Netmaster** is an outstanding value in communications software, so we sell **Netmaster** by itself for \$79. **Netmaster** requires 48k of RAM, one disk drive, and the **Networker** or another modem. It can also be used without a modem when two Apples are hard-wired together.

THE SOURCE™

Your purchase of the **Networker** with or without **Netmaster** comes complete with a membership to **THE SOURCE**, with its normal registration fee fully waived. **THE SOURCE** will put a world of electronic information and communication services at your fingertips—instantly. Electronic mail and computer conferencing. Current news and sports. Valuable business and financial information. Travel services. A wealth of information about personal computing. Even games. All fully compatible with your equipment, and ready to use at once.

Networker, Netmaster, and Networker/Netmaster Combo are all produced in the USA by ZOOM Telephonics, producers of the popular **DEMON DIALER**. The **Networker** is FCC registered, and all products come with a one-year warranty.

HOW DO I GET ONE? OR TWO?

Ask your computer dealer, or call one of our sales offices listed below for the dealer nearest you. Or call us direct at 1-800-631-3116, and we'll tell you where to get one. (In Massachusetts, call 1-617-423-1288.)

SALES OFFICES

Boston, MA (617) 329-4292; Metro New York (914) 834-5555; Philadelphia, PA (215) 638-4350; Pittsburgh, PA (412) 276-3310; Washington, D.C. (301) 942-4900; Atlanta, GA (404) 876-2288; Miami, FL (305) 945-8844; Rochester, NY (716) 385-6266; Dayton, OH (513) 890-5159; Cleveland, OH (216) 779-4435; Chicago, IL (312) 234-5911; Minneapolis, MN (612) 944-8640; Lenexa, KS (913) 541-1411; Dallas, TX (214) 747-0081; Denver, CO (303) 744-2323; Salt Lake City, UT (801) 466-2346; Phoenix, AZ (602) 265-3201; Los Angeles, CA (213) 949-9405; San Francisco, CA (415) 579-5561; Portland, OR (503) 292-3585; Redmond, WA (206) 881-8778.

ZOOM

ZOOM Telephonics, Inc.
207 South Street, Boston, MA 02111

The following are trademarks: Apple by Apple Computer; the Source servicemark by Source Telecomputing; Visiterm by Visicorp; ASCII Express by Southwestern Data Systems; DEMON DIALER by ZOOM Telephonics. © 1983 ZOOM Telephonics, Inc.

Circle 190 on Reader Service card.

and its observation. Date, time and location (latitude and longitude) are input and Astrocalc calculates and displays all basic data for the sun, moon and all planets. Astrocalc is available for \$29.95 from Zephyr Services, 306 South Homewood Ave., Pittsburgh, PA 15208. Reader Service number is 454.

The Great Creator

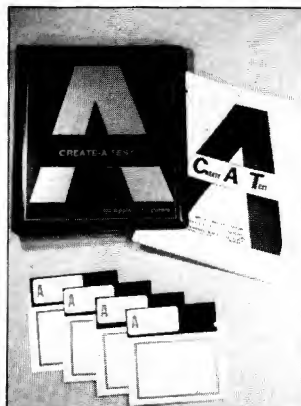
The Great Creator lets you create multiple-choice and fill-in-the-blank questionnaires on the computer in the language of your choice. The program contains character sets for 16 different accented languages besides English. Suggested price is \$399.95, from Gessler Educational Software, 900 Broadway, New York City, NY 10003. Reader Service number is 468.

Vindicator

A fast game with smooth animation, lots of moving shapes and sound is Vindicator from HAL Labs, 4074 Midland St., Riverside, CA 92505. It is set in a world where everything is out to get you. You are a heavily clad hero with only rapid fire lasers to defend yourself and eight eggs from zillions of aliens. Suggested retail price is \$25. Reader Service number is 458.

Computerized Road Atlas

Roadsearch-Plus simplifies the tedious process of determining driving routes for anyone who travels over the interstate highway sys-



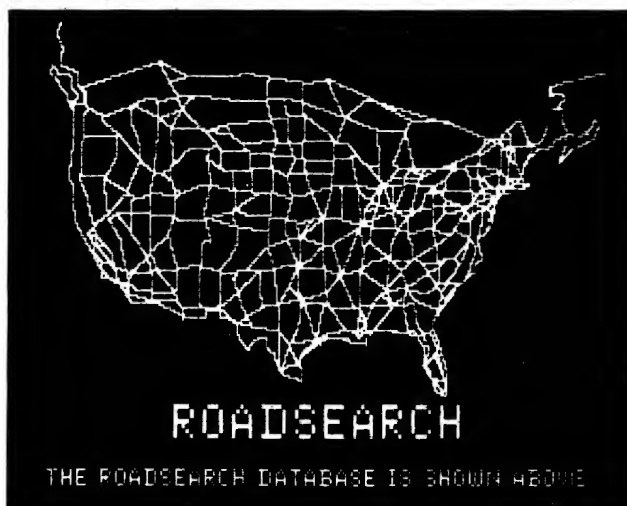
Easy testing with Create-A-Test.

tem. It computes the shortest, most practical routes between cities and avoids toll roads if desired. A database of 406 cities/road intersections and 70,000 miles of interstate and major through highways throughout the U.S. and Canada is included. Printouts include the driving route, distances, travel times and fuel usage in different formats. The suggested retail price is \$74.95 from Columbia Software,

PO Box 2235A, Marsh Hawk, MD 21045. Reader Service number is 466.

Create-A-Test

Cross Educational Software announces a test writing program for classroom management. With Create-A-Test, teachers can select questions from question disks and print them out to produce formatted tests in as little as ten minutes. The question disk has 21 questions. Suggested price is \$49.95 each. The program is available from Cross Educational Software, 1802 N. Trenton St., PO Box 1536, Ruston, LA 71270. Reader Service number is 455.



The end of the road.

Amperfinesse

Powerful line editing as well as sound and graphics commands are part of Avant-Garde's new programmer's utility, Amperfinesse. Applesoft Basic is given the power of Fortran and also allows data disks to be initialized without DOS. Suggested retail price is \$79.95. Contact Avant-Garde, PO Box 30160, Eugene, OR 97403, for further information. Reader Service number is 461.

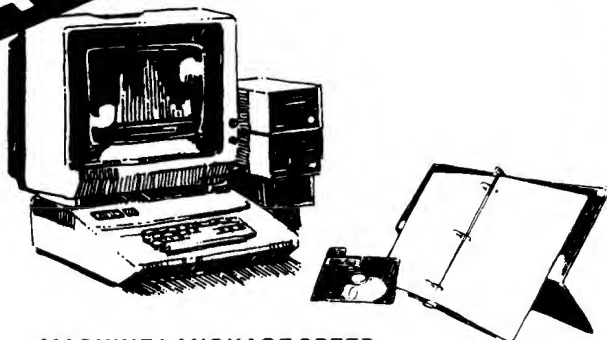
Secret Agent: Mission One

An evil scientist threatens to destroy the world—and only you can stop him. This sophisticated new graphics adventure invites you to outwit and outmaneuver a wily opponent. The program is written in Applesoft



Character sets for the Great Creator.

EXPAND- A-COMMAND



**MACHINE LANGUAGE SPEED
WHERE IT COUNTS...**

IN YOUR PROGRAM!

With AMPER-MAGIC™ there's no need to know machine language to benefit from its power.

To your Applesoft™ programs you can attach finished machine language routines (referenced by name, not by address) in seconds. No separate BLOADing. And with AMPER-MAGIC commands, you can pass variables back and forth directly, just as with built-in Applesoft commands.

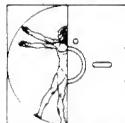
So name your routine, perform the append procedure, and AMPER-MAGIC takes over — machine language speed where it counts: in *your* programs. Even your commercial programs. AMPER-MAGIC COMMAND LIBRARIES™ gives you access to hundreds of relocatable machine language routines, including those from magazines and other libraries and — most notably — those from AMPER-MAGIC itself, which has over fifty routines of its own in two volumes, with more to come.

Imagine!

Only \$75.00 for the original AMPER-MAGIC by Bob Nacon
Only \$35.00 for AMPER-MAGIC COMMAND LIBRARY™, Volume 2
Plus shipping. MC and Visa accepted.

Amper-Magic™

See your dealer or contact us.



Anthro-Digital

103 Bartlett Avenue, Pittsfield, MA 01201
Telephone (413) 448-8278, Telex 467622

AMPER-MAGIC and AMPER-MAGIC COMMAND LIBRARY™ are trademarks of Anthro-Digital, Inc.
Applesoft is a trademark of Apple Computers, Inc.

Also available from Anthro-Digital: Versacalc (several versions), Visicalc Formatting Aids, The Executive Secretary, The Personal Secretary, and Executive Speller, Hebrew II and Hebrew II Plus, S-C Macro Assembler, QuickTrace, Amper-Magic, The Rental Manager, F.A.R.M. accounting packages, The Performance Manager, Omniscan VideoDisc interface, and Flipper. **DEALERS INVITED**

and assembly language for quick action and intricate hi-res screens. Timorous adventurers can save the game in risky situations. It's \$29.95 from Jor-And, PO Box 9180, Glendale, CA 91206. Reader Service number is 469.

Coin Collectors Rejoice!

Coins is a program now available for the Apple for numismatists to catalog an entire collection and obtain various reports that offer personal investment information. The program is priced at \$95 with quarterly updates for automatic re-evaluation of your collection for \$25. For more information, contact CompuQuote, 6914 Berquist Ave., Canoga Park, CA 91307. Reader Service number is 457.

Are You Wasting Energy?

Shelter Software's program, Home Energy Optimizer, helps you to make major reductions in your household fuel expenses by carefully analyzing your home. The program calculates whether your home or its heating system wastes energy, then recommends steps to save energy. Priced at \$39.95, the program is available from Shelter Software, Box 521, Emmaus, PA 18048. Reader Service number is 459.

Winning on Wall Street

Winning on Wall Street is an integrated software system for stock market investors and traders. It includes the following pro-

grams: Trader's Data Manager, a database module with interactive graphics and reporting; Trader's Forecaster, a forecasting and technical analysis tool kit; and Trader's Accountant, a portfolio management module that provides ten reports. The complete system retails for \$700, or programs can be purchased separately from Summa Software Corp., PO Box 2046, Beaverton, OR 97075. Reader Service number is 450.

New Word Processor

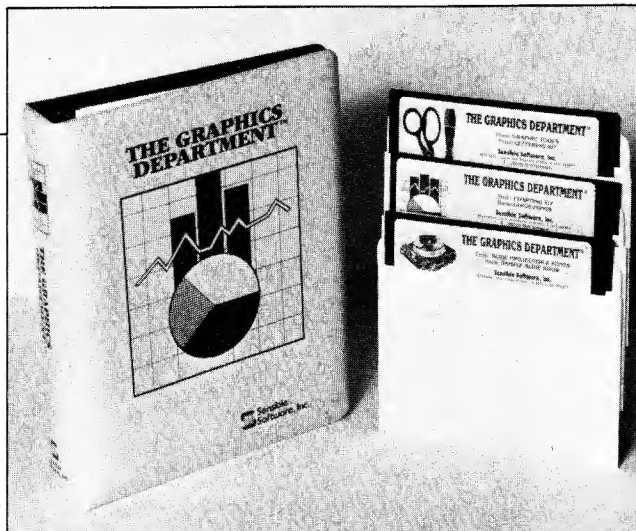
Home Writer, a word processor from Micro Lab Inc., creates and prints documents for \$49.95. An additional feature is the electronic card file for letter writing and conditional printing that permits merging of mail lists and personalizing documents. Single key commands make this program easy to learn. Contact Micro Lab Inc., 2699 Skokie Valley, Chicago, IL 60035, for more information. Reader Service number is 464.

Design Your Own Lessons

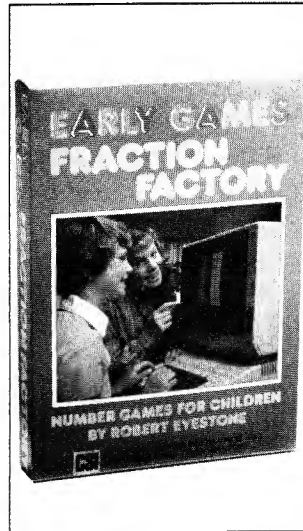
With the Apple Authorizing System, teachers and trainers can create interactive, self-paced computer-based lessons without the need for programming skills. On-line helps prompt the user throughout the lesson. Graphics can be created and modified by using a few simple commands. The package includes four disks and a manual for \$255 from Courseware Inc., 10075 Carroll Canyon Road, San Diego, CA 92131. Reader Service number is 465.

Graphics Department

Plotting, charting, lettering, graphics editor and slide projector are graphic tools in the Graphics Department. It can be used with all Apple II's. The price is \$124.95 at your local dealer or from Sensible Software, 6619 Perham Drive, West Bloomfield, MI 48033. Reader Service number is 452.



Your own Graphics Department.



Fractions without fear.

Learning Games

Three new learning games from Counterpoint Software offer learning opportunities. Early Games Piece of Cake leads children

into a magical bakery where they learn to add, subtract, multiply and divide.

Early Games Fraction Factory uses colorful graphics and musical sounds to teach fraction concepts to

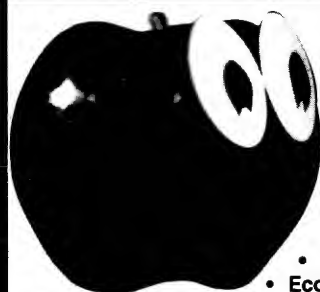
elementary and junior high students.

Preschoolers are guided through a series of six discrimination and matching games involving colors, shapes, sizes, lines and directions, facial expressions

and reversible letters in Early Games Matchmaker.

All games are available for \$29.95 from Counterpoint Software Inc., 4005 West Sixty-fifth St., Minneapolis, MN 55435. Reader Service number is 467.

Circle 204 on Reader Service card.



LET YOUR APPLE SEE THE WORLD!

The DS-65 Digisector® opens up a whole new world for your Apple II. Your computer can now be a part of the action, taking pictures to amuse your friends, watching your house while you're away, taking computer portraits . . . the applications abound! The DS-65 is a random access video digitizer. It converts a TV camera's output into digital information your computer can process. The DS-65 features:

- **High Resolution** — a 256 × 256 picture element scan
- **Precision** — 64 levels of grey scale
- **Versatility** — Accepts either NTSC or industrial video input
- **Economy** — A professional tool priced for the hobbyist

The DS-65 is an intelligent peripheral card with on-board software in 2708 EPROM. Check these software features:

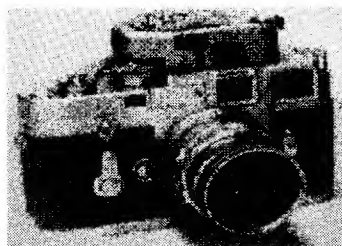
- Full screen scans directly to Apple Hi-Res screen
- Easy random access digitizing by Basic programs
- Line-scan digitizing for reading charts or tracking objects
- Utility functions for clearing and copying the Hi-Res screen

Use the DS-65 for precision security systems; computer portraiture; robotics; fast to slow scan conversion; moving target indicators; reading UPC codes, musical scores and paper tape and more! **GIVE YOUR APPLE THE GIFT OF SIGHT!** DS-65 Price: \$349.95 / FSII Camera Price: \$299.00 / Combination Price: \$599.00

ADDITIONAL SOFTWARE FOR THE DS-65

— **Picture Scanner:** An applications tool for processing video images for display on the Hi-Res screen. A variety of dithering algorithms are provided, for compressing the digitized image into the Hi-Res screen and simulating grey scales. Price: \$39.95

— **Superscan:** Enables you to enhance the DS-65's Hi-Res pictures with colors! Choose from 21 different colors and assign them to grey scale values, modify pictures, zoom, enhance contrast, etc. Includes print routines for Anadex 9500 or 9501; Epson MX-80GFT and MX-100; and IDS 460 Paper Tiger*. Written for The Micro Works by Magna Soft. Price: \$79.95



HI-RES PICTURE USING THE DS-65 AND PICTURE SCANNER SOFTWARE

*Paper Tiger is a trademark of Integral Data Systems, Inc.

THE MICRO WORKS

Coming soon for IBM PC!

California Residents add 6% Tax

Mastercard/Visa Accepted

P.O. BOX 1110 DEL MAR, CA 92014

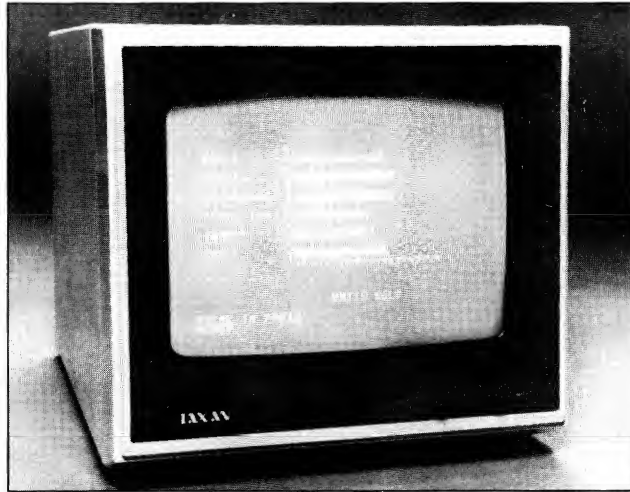
619-942-2400

New Products

edited by Joan Witham

RGBvision 210 Monitor

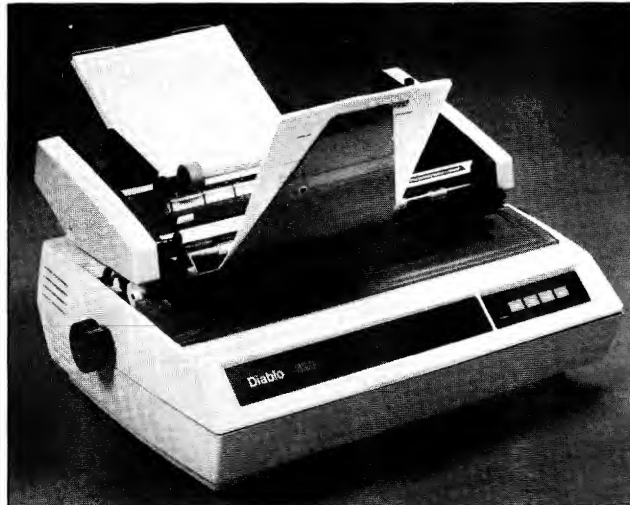
The Color Monitor has a medium resolution (380 horizontal lines) and .63mm slit pitch with 15 MHz bandwidth. It features on/off volume control and contrast on the front, as well as brightness, sharpness, color and hue controls on the back. A removable glare-screen is also provided. The price is \$399 from local dealers or TSK Electronics Corp., 18005 Cortney Court, City of Industry, CA 91748. Reader Service number is 471.



RGBvision 210 Color Monitor.

Paper Feeder

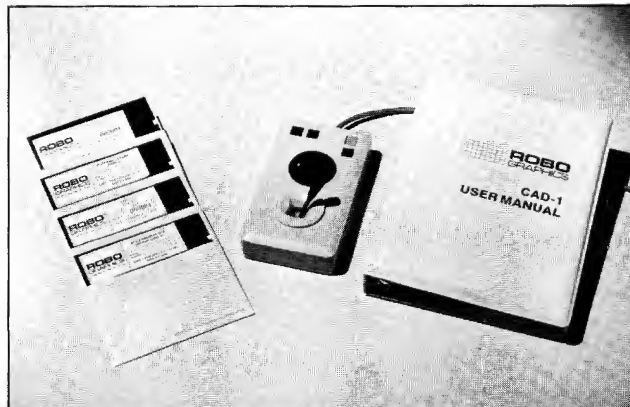
The Personalfeeder reduces time-consuming paper handling for personal computer users by automatically inserting, removing and collating cut sheets of paper. It is available for most Diablo, Qume, Ricoh, NEC and TEC printers. The recommended price is \$495 from Ziyad Inc., 100 Ford Road, Denville, NJ 07834. Reader Service number is 473.



The Personalfeeder eats up time.

Robographics CAD-1

The CAD-1, a computer-aided drafting and design system, connects to the Apple II Plus or IIe and produces scaled technical drawings and custom graphics. For \$4920, the complete package includes a controller, software, user manual and an interface module from Chessell-Robocom Corp., 125 Pheasant Run, Suite 2B, Newtown, PA 18940. Reader Service number is 475.



Robographics CAD-1 is a drafting and design system.

Zoom in With Graphmax

Graphmax, a graphics printer card for the Apple, provides zoom magnification up to 99 times with full picture cropping. More powerful than the Grappler, it is available for \$159.95 from Micromax Systems Inc., 6868 Nancy Ridge Drive, San Diego, CA 92121. Reader Service number is 490.

Expanded Storage

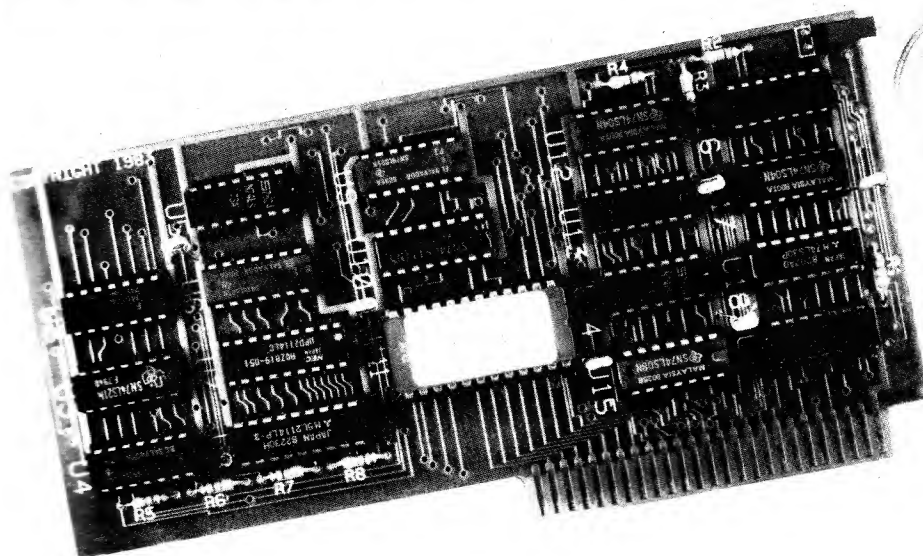
The DiscMaster II board allows you to connect two 8-inch or two 3 1/2-inch double density disk drives to your Apple II or Apple-compatible computer. The DiscMaster II package for \$265 includes software drivers to run under DOS 3.3, Pascal 1.1 and Microsoft CP/M. It is available from Data-Cue, 5696 Hwy. 431 South, Brownsboro, AL 35741. Reader Service number is 485.

Apple Serial Card III

For Apple III users who require more than one serial communication device, Apple Computer has announced the Apple Serial Card III. By inserting up to four cards in the Apple III's internal slots, a user can communicate with a variety of modems, plotters, printers and other serial communications devices. Suggested retail price is \$225. For further information, contact Apple Computer Inc., 10260 Bandley Drive, Cupertino, CA 95014. Reader Service number is 470.

Season Special REPLAY II

\$ 80



REPLAY II Apple Program Copy And Development System

- Disk Formatting Irrelevant
- Does not interfere with other cards
- Card is transparent until copy is desired
- Copies all 64K with *no* compression
- Menu driven, automatic file creation
- Copy and restart in under 15 seconds
- Copies memory resident programs
- Analyze programs
- Development tool
- Transparent step & trace
- Backwards & forward disassembly scroll
- Game modification
- Now for IIe Also

To order or request info, write or call:
Micro-Analyst, Inc.
P.O. Box 15003
Austin, TX 78761
(512) 926-4327

Cost:
Replay II or IIe \$80
Please specify when ordering
Machine language eeprom \$20
Step and Trace

If both ordered subtract \$5.
Outside U.S. Canada add \$10 shipping. Texas Residents add 5% sales tax.
VISA/MASTER CARD accepted!!

REPLAY II is intended to be used as an analysis tool, for program development, and for making archival backup copies.

Minimum requirements are an APPLE II and a single disk drive.

*Apple is a registered trademark for Apple Computers Inc.

Why ours is better!

1. Accurate copy of memory
2. Language card not needed to copy or run
- when using Replay Card
3. Fast copy & restart - 15 seconds -
4. Analysis programs and 60 pages of documentation
5. Copy system in eeprom
- No need to boot other disks at copy time -

Reviewed in Hardcore Magazine

Softkey Publishing

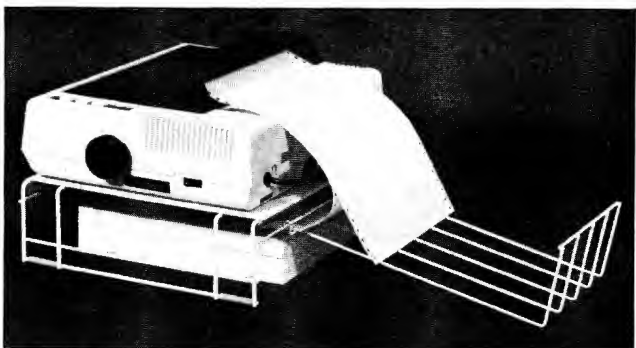
"The Replay card is very easy to use and understand . . . of all the cards I have used, I have found the Replay II to be the most powerful card available."



Micro-Analyst, Inc.



TouchBase 2 controls static and fatigue.



Paper Tamer.

Classic Static Control

The TouchBase 2 slides under the front edge of the Apple computer to provide comfortable wrist support. It combats fatigue and static electricity downtime. Suggested retail price is \$49 from Omnium Corp., 201 North Second St., Stillwater, MN 55082. Reader Service number is 477.

catches and folds printouts. Suggested retail price is \$35.95 plus \$2 S/H from Micromate Accessories, 5801 Duluth St., Suite 105, Minneapolis, MN 55422. Reader Service number is 483.

68000 Board

QPAK-68, an add-in board and software package that turns the Apple II into a low-cost 68000 assembly language development system, is intended for engineers, researchers, programmers, etc. who want to learn the 68000. At \$695, the complete system includes a plug-in board to

Paper Tamer

The Paper Tamer stores up to 900 pages of fan-fold paper beneath any standard 80-column printer, while allowing continuous paper feed. An output tray

Circle 62 on Reader Service card.

COOL-AIDE™

**SUPER COOLING FAN
TRANSIENT VOLTAGE PROTECTION
RFI/EMI FILTERING
FOR APPLE II* COMPUTERS
\$59.95**



Features

- Thin, compact design, easy installation, just clips on
- Compatible with Apple standard computer case
- Entire system controlled by front power switch, 120/60 operation
- Internal voltage surge protection & RFI/EMI filtering
- Power indicator light & dual auxiliary outlets
- Quiet and efficient operation
- Reduce heat build up, moves 37 CFM of air

Also available from Kalglo Electronics Co., Inc.:

AEGIS™ Power Conditioning Equipment

SPIKE-SPIKER* - Transient voltage protectors & noise filter from \$34.95-\$94.95

LINE-SAVER™ - Uninterruptible Power Systems - from \$395.00

SEND FOR FREE LITERATURE

KALGLO®

6584 Ruch Rd., Dept. I
Bethlehem, PA 18017

DEALER INQUIRIES INVITED

Use your credit card or send check and we pay shipping

Out of state, order toll free
800-524-0400 TWX 510-651-2101
215-837-0700

Pa. Res. add 6% sales tax
for COD add \$3.00 + shipping

*Reg. trademark of Apple Computers, Inc.

Circle 414 on Reader Service card.

MICRO MANIA

APPLE USERS SAVE 20-25% OFF ADD-ONS. 30% OFF SOFTWARE. WE CARRY THE MOST WANTED ITEMS. NO HIDDEN CHARGES. MOST ORDERS SHIPPED SAME DAY. WE REPRESENT 30 LINES SO IF YOU DON'T SEE IT... CALL FOR PRICES HERE ARE THE MOST REQUESTED PRODUCTS.

MODEMS		MONITORS	
HAYES SMARTMODEM 300	279...234	AMDEK 12" GREEN	179... 140
HAYES SMARTMODEM 1200	699...561	AMDEK 12" AMBER	199... 157
HAYES MICROMODEM II	379...299	AMDEK COLOR I	399... 332
NOVATION J-CAT	149...108	TAXAN 12" COLOR MED.	399... 330
NOVATION SMARTCAT	249...180	TAXAN 12" AMBER	189... 139
NOVATION APPLICAT II	389...294	KDS 12" GREEN	129... 108
DRIVES		PRINTERS	
RANA ELITE I	379...300	NEC 8023	645... 415
RANA ELITE II	649...495	NEC 3510	1895...1645
RANA ELITE III	849...650	NEC 3530	1995...1760
SAMSON HALF HITE	399...293	NEC 7710	2795...2100
MICRO DRIVE HALF HITE	399...275	OKIDATA 82A	549... 425
VISTA FLOPPY	299...260	OKIDATA 83A	899... 720
CARDS		MISCELLANEOUS	
MPC SERIAL INTER.	129... 88	TG JOYSTICKS	65... 46
MPC PARALLEL INTER.	90... 65	ADAM & EVE GAME	40... 27
MPC 16K RAM	99... 59	SUPER FAN	75... 60
MPC 64K & 80 COL.	289...150	SAMSON JOYSTICK	30... 22
GRAPPLER +	175...125	KRAFT JOYSTICK	65... 45
PKA 50	175...125	LEMON SURGE	60... 46
TYMAC PARALLEL INTER.	139... 85	LIME SURGE	90... 67

CALL FOR FREE CATALOG. MA RESIDENTS ADD 5%. OCCASIONAL SHORTAGES OCCUR SPECIFY REFUND. PRICING/PROBLEMS 617-852-2637. VISA/MC CALL 800-448-4511 EXT. 337 NY STATE 800-962-1480 EXT. 337. ORDERS ONLY. PERSONAL/COMPANY CHECKS ALLOW 10 DAYS TO CLEAR, SEND TO

MICRO MANIA, P.O. BOX 507, WORCESTER, MA 01601



Got a great new program up your sleeve?

If you write programs, we need each other.

We know that some great software is being developed between the hours of midnight and 6:00 AM, in the silence of America's homes. If you're one of those disk-driven writers, buttoning up by day and bunkering down by night, take heart. Fame and fortune could be right around the corner.

You'll hear from us in 30 days.

I/O WARE is looking for innovative programs for the home and small business markets: word processing, graphic arts, finance, planning, home budgeting, "how-to", etc. Programs that will run on the Commodore 64 (Disk or Tape); IBM PC and PC Jr. (Disk); Apple II (Disk); TRS-80 I, III, IV (Disk); and Color Computer (Disk or Tape). You'll receive our decision in 30 days. If you have what we're looking for we'll immediately send you an advance of at least \$250.

And that's just the beginning. I/O WARE can give you the kind of exposure (and royalties) you've been dreaming of.

*The I/O WARE Professionals:
Duane Manseau, Jim Eastman, Tom Cullity
"We're looking for great new software."*

See your name up in bytes.

Every program needs professional documentation, packaging, distribution, and promotion. That's our job. We'll transform your program into a polished, and successful software package.

I/O WARE is part of the team of computer experts publishing the leading computer magazines in the country. Which means your program will have access to major national advertising, direct mail, and hundreds of retail outlets across the country.

So hit us with your best shot—today.

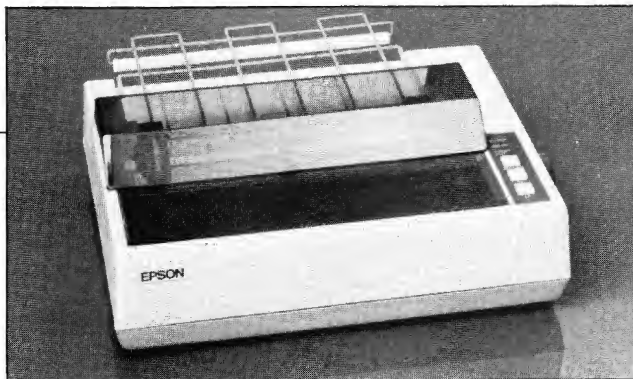
Because we're putting together a very strong line of software. Fast. And there's a good chance you could be a part of the team. Just call Tom Cullity at our software hotline, 603/924-9897, and let us know what you have up your sleeve.

We'll put a cash advance in your pocket.



I/O WARE INC.
Peterborough, NH 03458
Attention: Tom Cullity

Circle 440 on Reader Service card.



Epson RX-80 F/T printer.

run 68000 programs, a combined Editor/Assembler to create 68000 source code, a Debugger for testing it and a variety of documentation and reference material for learning how the 68000 works. For more information, contact Qwerty Inc., 9252 Chesapeake Dr., Suite 600, San Diego, CA 92123. Reader Service number is 491.

RX-80 F/T

Epson America Inc. has released the RX-80 F/T dot matrix printer, which comes standard with tractor and friction paper feed in addition to all the features of the original RX-80 model. The RX-80 F/T has a printing speed of 100 cps, with a choice of two full 96-character ASCII sets,

plus nine international character sets, including 128 type styles. The RX-80 F/T is available from Epson America, 3415 Kashiwa St., Torrance, CA 90505 at a suggested retail price of \$599. Reader Service number is 486.

document is then printed and delivered by Purolator to its destination. Four-hour service costs \$25, while overnight service costs \$6. For further information, contact Purolator Inc., 265 Old New Brunswick Road, Piscataway, NJ 08854. Reader Service number is 481.

MCI Mail

MCI, a long-distance telecommunications company, will offer an electronic mail service called MCI Mail that allows any office automation device or personal computer to transmit a message directly through MCI's nationwide network to 15 major markets in the U.S. A hard copy of the

Brief Case Boxes

Computer Peripheral Products is marketing stock format computer paper in unique mini and micro boxes for the home and professional market. The one-inch and three-inch-thick boxed paper can feed directly from box to comput-

Circle 116 on Reader Service card.

**ENTER TO WIN
DISCOUNT OFFERS
EXCLUSIVE DISKS • CARTRIDGES
CASSETTES • DISKS • LATEST RELEASES
BONUS COUPONS • LATEST SOFTWARE
EDUCATIONAL BUSINESS SOFTWARE, INC.**

UNLIMITED SOFTWARE, INC.
Presents
DISK-OF-THE-MONTH CLUB
Tape • Cartridge • Disk
NO OBLIGATION • SEND FOR DETAILS NOW

SAVE UP TO 40%

UNLIMITED SOFTWARE, INC.
DISK-OF-THE-MONTH CLUB
P.O. BOX 3223 LODI, N.J. 07644

NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

I own the _____ computer
with cassette ☐ disk ☐

Circle 163 on Reader Service card.

PUT YOUR APPLE TO WORK WITH

WORK FORCE II ^{T.M.}

A collection of 6 ultra-friendly programs.

1. THE BALANCING ACT
once a month checkbook balancing.
2. THE CALCULATOR
4 function printing calculator with memory & %.
3. THE LOAN ANALYZER
loan and mortgage amortization.
4. THE SAVING ANALYZER
analyzes future value of savings, investments, & rates.
5. THE WAGE ANALYZER
examines your income and pay raises.
6. THE LINE WRITER
a line-at-a-time correctable typewriter.

ALL SIX ONLY \$29.95

Manual Included

Our Software is Copyable & Affordable, *Insist On It!*

Requires a Apple IIe, II + , or II with 48k, & DOS 3.3
Apple, Apple II, II + , and IIe are trademarks of Apple Computer, Inc.

Please send me _____ copies of WORK FORCE II at \$29.95 each.
☐ check or money order. ☐ American Express ☐ COD (add \$3.00 for COD)

Card # _____ (15 digits)

Signature _____ Valid From _____ to _____

Name _____ Phone _____

Address _____

City/State/Zip _____

Mail To: **Core Concepts**
P.O. Box 24157 Tempe, AZ 85282
(602) 968-3756



er. Designed to stack, store, reuse and carry easily, the Brief Case Boxes are priced from \$5.20 to \$24.45 from Computer Peripherals Inc., 4690 Joliet St., Denver, CO 80239. Reader Service number is 472.

Ramcracker Plus

Polycard Industries features the Ramcracker Plus with 16K RAM to back up copy-protected programs. It can be used as a debugging tool also and will instantly freeze a program—great for games. Suggested retail price is \$175 plus \$3 for handling from Polycard Industries, Box 278, Pitt Meadows,

British Columbia V0M 1P0. Reader Service number is 484.

Put Your Computer on Wheels

For more mobility and greater accessibility, put your microcomputer on wheels on the Model MTT-105 or MTT-106 Work Station. This sturdy steel frame work station, with a warm furniture finish in laminated walnut or oak finish, will look great in offices, schools, labs or homes. For further information, contact Mobile-Tronics Co. Inc., Box 1022, Tustin, CA 92680. Reader Service number is 479.



Movable work station.

Circle 45 on Reader Service card.

MASTER HORSE HANDICAPPER™



EVALUATES FROM RACING FORM!

Age	Gender	Post (Today)
Class	Jockey (Today)	Post (Last)
Condition	Jockey (Last)	Speed
Consistency	Length	Trainer
Earnings	Time of Year	Workouts

And gives you GRAPHIC REPRESENTATION of finish

ADAPTS TO ANY TRACK IN THE WORLD

Quickly and easily changing data statements relating to local track records/jockeys and trainers. COMPLETE INSTRUCTIONS INCLUDED

TH. Master Thoroughbred Handicapper™

A "Full Featured" Thoroughbred Program for the professional and serious novice. A menu driven program that deals with "all" relevant variables found on the RACING FORM.

MEM 32K \$99⁹⁵

QH. Master Quarterhorse Program™

Complete Quarterhorse analysis designed for the "close" finishes involved in this type of race. This program is designed around intricate "Speed" ratings but includes all handicapping variables. Complete with instructions.

MEM 32K \$99⁹⁵

MB. Master Bettor™

A compliment to ALL Master Handicapper programs, includes: 1) Win/Place/Show 2) Quinella 3) Exacta 4) Trifecta 5) Pick Six 6) Daily Double 7) Money Management 8) Odds Analysis 9) and Much More. A perfect program designed to use results from a Master Programs to generate "best bet"

MEM 16K \$59⁹⁵

Apple™ is the trademark of Apple Computer, Inc.

SPRING RACING SPECIAL

COMPLETE PROFESSIONAL SYSTEM:

- Deluxe Master Handicapper™ or Master Dog Analysis™
- Master Bettor™
- Track Management™
- Manual and Instructions

Prof. Jones' Price **\$199⁹⁵** DISK ONLY

DA. Master Dog Analysis™

The only professional dog handicapper on the market, includes:

- Speed
- Post Today
- Kennel
- Post Lane
- Distance
- Condition
- Running Style
- Weight
- plus much more.

If you are near a greyhound track, you can't afford not to use this program.

MEM 32K \$99⁹⁵

Professor Jones' Football Predictor, Prof. Pix

This complete football analysis will predict:

- Overlays
- Point Spreads
- "Superplays"
- "Over/Under" Bets.

For NFL/USL/College. Specify Mod I/III

T — \$19⁹⁵ D \$24⁹⁵

Track Management™

A revolutionary data base program designed to keep records on "ALL" horses or dogs running at a track. Can also be used to expand Jockey/Trainer stats in all Master Handicapper™ programs. **A MUST FOR THE SERIOUS HANDICAPPER.** (48K, Disk Only) \$69⁹⁵

PROF. JONES' PROFESSIONAL COMPUTER SYSTEM

- Apple Soft™ compatible (with Apple Filer)
- CPM™ compatible (includes card)
- 64K memory
- Disk drive
- Drive controller
- High resolution monitor (green)
- All cables etc.
- Your choice of one gambling program by Prof. Jones

Complete **\$1195⁰⁰** (until I run out)
Price

HARDWARE

Disk Drive	\$229 ⁹⁵
Controller	\$59 ⁹⁵
Echo Speech Synthesizer	\$249 ⁹⁵
Echo II	\$139 ⁹⁵
Orange Grappler	\$149 ⁹⁵
Buffer Board	\$129 ⁹⁵
High Res Monitors	CALL

ENTERTAINMENT

"Saigon, The Final Days"	\$34 ⁹⁵
"Programmers Flight System"	\$45 ⁹⁵

PROGRAMS AVAILABLE FOR:

TRS-80 I, III, 4
Apple™ II, II+, IIE
CPM 2.2, 3.0
SOON: MS-DOS, MOD 100

WE CARRY

MANY
ITEMS
NOT
LISTED

Send check / money order / VISA / MasterCard
(Include expiration date) to:

48 HOUR SHIPPING

Call 208-342-6939
M-F 8-7 MST

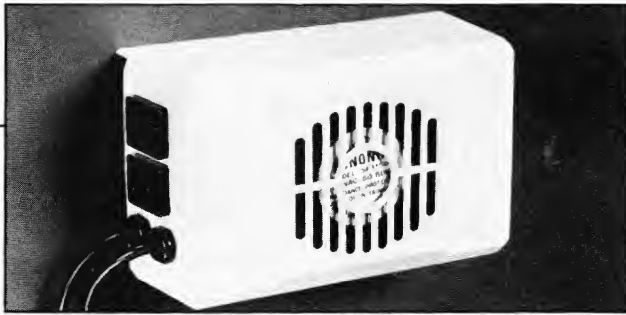
Prof. Jones
1114 N. 24th St.
Boise, ID 83702



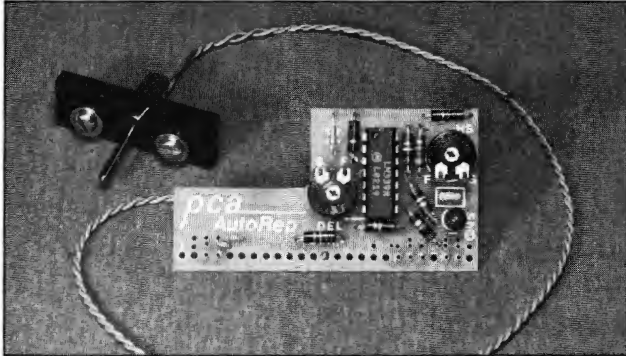
TERMS: FREE SHIPPING ALL SOFTWARE
Add \$6.00 hardware / C.O.D. Add \$6.00 / Add 3 weeks personal checks / Add 4.5% ID residents
Add \$6.00 outside U.S.A. / Prices subject to change

**71% "IN MONEY"
FOR 1983**

DEALER INQUIRIES INVITED



Get on the track with the Cooling System.



Enhancers are the key.

Half Track is on the Track

The Half Track cooling system has an illuminated on/off switch and two 3-wire grounded outlet receptacles mounted on the rear. The cooling system, at \$79.95, comes complete with AC surge suppression and the fan is rated at 16 cubic feet of air per second. Contact WTI, 1530 South Sinclair, Anaheim, CA 92806, for more information. Reader Service number is 489.

Rep 1.3 (\$21.95), an automatic key repeat enhancer, and Shiftkey 1.0 (\$7.95), a one-wire shift-key adapter for use with or without AutoRep. Easy to install, they upgrade your Apple II or II Plus with added speed for word processing, spreadsheets and program editing. They can be obtained from Pacific Computer Accessories, PO Box 25730, Honolulu, HI 96825. Reader Service number is 482.

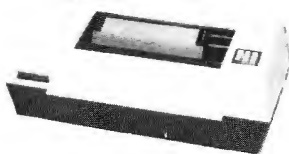
IBM Emulation

Transform your Apple II into a 16-bit microcomputer with the 88 Card

Two Apple Accessories

Pacific Computer Accessories introduces the Auto-

Circle 283 on Reader Service card.



DATA ROYAL SERIAL PRINTER

- upper/lower case & graphics capability
- bidirectional, 132 character line
- RS232, 120 cps, ASCII, 7 x 9 dot matrix
- built in self test
- sprocket feed, 2 1/2" to 15" width
- 110, 300, 1200 bps
- keyboards available (limited quantity) \$75.00
- shipping wt. 80 lbs.
- \$400.00 f.o.b. our warehouse



CONRAC MONITOR

- 9 inch, P4 phos.
- 80 x 24 characters
- composite video in (RCA phono)
- controls in front panel
- shipping wt. 30 lbs.
- \$45.00 f.o.b. our warehouse

CONRAC RGB COLOR MONITOR

- 19 inch—high res.—10 mh
- 80 x 24 characters—500 line res.
- w/o cabinet
- shipping wt. 75 lbs.
- RGB video in \$375.00
- Composite video in \$475.00
- all prices f.o.b. our warehouse



DUAL DISK DRIVE CABINET

- FITS ALL Shugart 800 series
- 115 VAC motor supply & all cables
- shipping wt. 30 lbs.
- \$50.00 f.o.b. our warehouse



SHUGART 8" DISK DRIVE

- SS/DD
- Model 800-2
- requires 115 VAC (24VDC. + 5VDC. - 5VDC)
- \$140.00 (new)
- \$100.00 (used) limited usage
- shipping wt. 16 lbs.
- all prices f.o.b. our warehouse

SELECTRONICS

1229 S. Napa St. Philadelphia PA 19146
Phone: (215) 468-4645 • (215) 468-7891



FOREIGN COMPUTER STORES MAGAZINE DEALERS

You have a large technical audience that speaks English and is in need of the kind of microcomputer information the Wayne Green Publications group provides.

Provide your audience with the magazines they need and make money at the same time. For details on selling *Microcomputing*, *80 Micro*, *inCider*, *HOT CoCo*, *RUN* and *Wayne Green Books* contact:

SANDRA JOSEPH
WORLD WIDE MEDIA
386 PARK AVE. SOUTH
NEW YORK, N.Y. 10016
PHONE—(212) 686-1520
TELEX—620430

from Personal Computer Products Inc., 16776 Bernardo Center Drive, San Diego, CA 92128. For \$595 you can emulate an IBM PC and run 16-bit software that uses MS-DOS. Your programs will also run 30% faster while gaining 64K bytes. Reader Service number is 488.

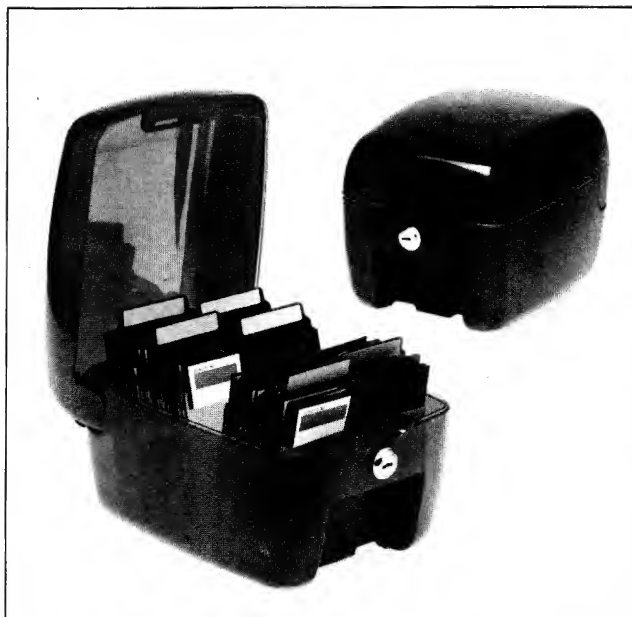
tection of valuable data. Suggested retail price is \$24.95. For further information, contact Ring King Visibles Inc., 2210 Second Ave., PO Box 599, Muscatine, IA 52761. Reader Service number is 487.

Publisher-Quality Typesetting

Personal Composition System brings high-quality typographic communication into the office environment using Apple Computer's Lisa. The system uses special interfacing software to link a variety of Compugraphic output devices that deliver publisher-quality

Lockup Storage

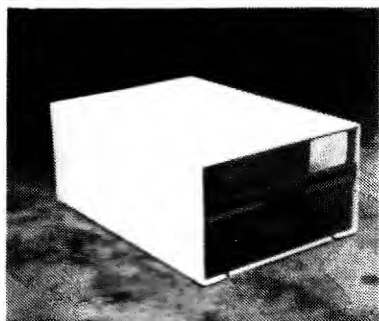
The MDT070, a locking storage system for 5¼-inch disks, features a hinged lid, two built-in handles and interior dividers. Ruggedly built, the tray is injection molded of plastic for maximum protection



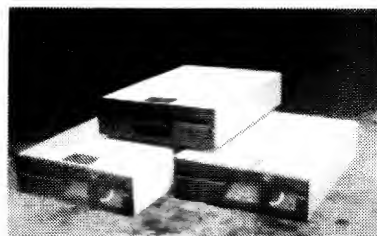
Safe and sound disk storage.

Circle 352 on Reader Service card

Buy your computer from APPLE™ But!!! Buy your Disk Drives from MICRO-DESIGN



Full Size SA390
Shugart Mechanism
Just **225⁹⁵**



Half-Height
Slimlines
Alps, Teac &
Panasonic
from **249⁹⁵**

Micro-Design Apple Compatible Drives are factory tested, warranted for 120 days (30 more than Apple) and are shipped in Apple Beige cases with cables ready to plug in and run.

Disk Drive Controller	59⁹⁵
16K RAM Card	49⁹⁵
80 Column Card	195⁹⁵

MICRO-DESIGN

6301 Manchaca Rd., Ste. B
Austin, Tx. 78745

Information & orders
CALL TOLL FREE
(512) 441-7890 (Texas Residents)
1-800-531-5002

MEMORANDUM

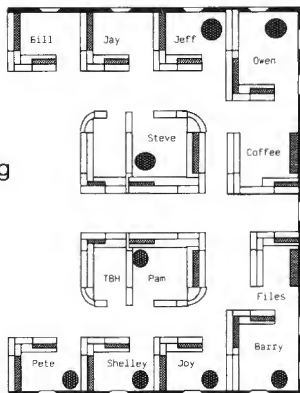
John --

January 27, 1983

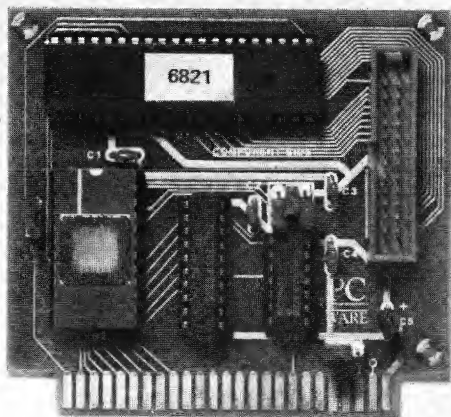
Here's a copy of the alternative floor plan for our section. Please look it over. This arrangement would give us more offices with windows, though of course they are smaller than the current layout. It also allows room for 3 more offices. What do you think?

David

Northeast Wing
Building 4



High-quality office typesetting.



Parallel I/O Interface offers multiple drivers.

ity office typesetting. You can create attention-getting memos, letters, reports, proposals, visual aids and other documents. Prices range from \$5800 for the software alone or \$13,995 for the input terminal and interfacing software for those with a Compugraphic typesetter already. Contact Compugraphic Corp., 200 Ballardsvale St., Wilmington, MA 01887, for further information. Reader Service number is 480.

Printer Interfaces

PC Ware has introduced a serial interface for \$184.95 that features a powerful 2K intelligent driver in EPROM, crystal controlled baud rates, double-buffered data, choice of four handshake signals and much more. Its new parallel I/O Interface offers multiple drivers onboard and dual 8-bit bidirectional parallel ports, among other features, for \$89.95. For more information, you can contact PC Ware at 4883

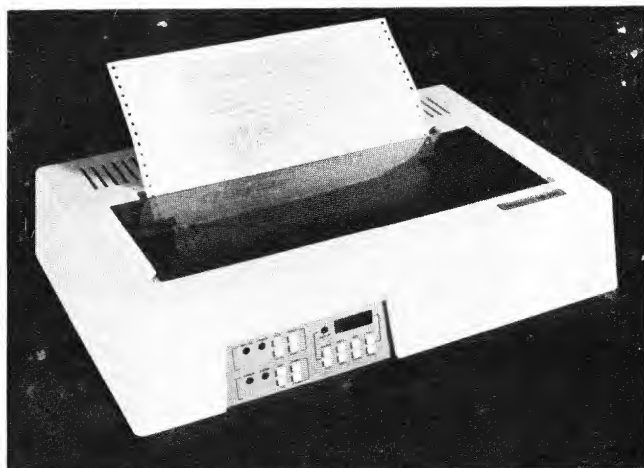
Tonino Drive, San Jose, CA 95136. Reader Service number is 476.

Multimode Matrix Printer

All in one unit, the DS220 provides correspondence printing for word processing, draft-quality printing for high-speed data processing, as well as dot-addressable graphics. The DS220 is available through Datasouth's distributors for \$1995. For further information, contact Datasouth Computer Corp., 4216 Stuart Andrew Blvd., Charlotte, NC 28210. Reader Service number is 478.

Analog Connection II

Designed for laboratory and industrial uses such as datalogging, process monitoring and controlling, the Analog Connection II card measures temperature, pressure, flow and other analog inputs from



Datasouth's DS220 printer.

H & W COMPUTER SYSTEMS

Bank Street Writer	46.00
Home Accountant	49.00
Format II	95.00
Kinden Comp	22.50
Facemaker	25.50
Master Type	28.50
Handic on Basic	52.00
Zork I, II, III	28.50
Frogger	25.50
Zaxxon	28.50
Temple of Apshai	28.50
Repton	28.50
Choplinden	25.50
Lode Runner	22.50
AE	25.50
Dark Crystal	28.50
Word Handler	41.00
List Handler	35.00
LISA 2.6	60.00

MASTERCARD & VISA

(702)727-4274

Add \$5.00 Shipping & Handling

PO BOX 1207
PAHRUMP, NV 89041

DON'T COOK YOUR APPLE®!

Have you added an 80 column, Z80 or RAM card to your *Apple II*?
Have you also connected disk drives and printers?

If so, your *Apple* runs the risk of overheating, spoiling programs and seriously shortening the life of major components. And look at the tangle of wires that you have!



THE FAN™ is a single unit with a very quiet and efficient cooling fan. It has all the necessary connectors and fits neatly on the back of your *Apple*.

THE FAN also filters out surges and spikes in the main supply which can damage your hardware and corrupt data. A single switch ensures that all peripherals are turned off at the same time as the *Apple*.

THE FAN is simple to attach and remove, and matches the *Apple* perfectly.

TO ORDER, please send check or money order for \$155.00 to:

Shipping and handling charges are included. Colorado residents, please add \$5.25 to cover 3.5% State sales tax.

KEMCORE COMPANY

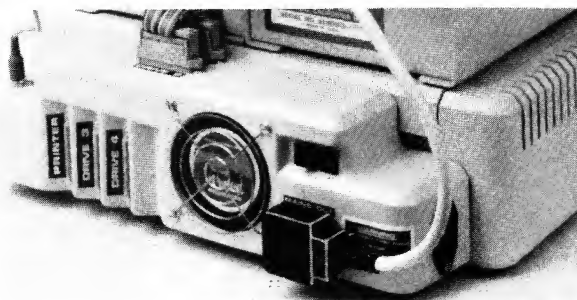
Suite 7068

111 East Drake

Fort Collins, CO 80525



'Apple' and 'Apple II' are registered trademarks of Apple Computers, Inc.



Now you can monitor and control the world (or at least your part of it) with a little help from APPLIED ENGINEERING

12 BIT, 16 CHANNEL, PROGRAMMABLE GAIN A/D

- All new 1984 design incorporates the latest micro-processor C. technologies.
- Complete 12 bit A/D converter, with an accuracy of 0.02%.
- Two independent channels (single ended thru dual and -duals are measured against the Apple's CND) or 8 differential channels. Most all the signals you will measure are single ended.
- 4 channel programmable full scale range, any of the 7 channels can have any range at any time. Under program control, you can select any of the following ranges: ± 10 volts, ± 5 V, ± 2.5 V, ± 1.25 V, ± 600 MV, ± 250 MV, ± 100 MV, ± 50 MV, or ± 25 MV.
- Conversion time (25 microseconds).
- Analog input resistance greater than 1,000,000 ohms.
- Low impedance scaling resistors.
- Low power consumption through the use of CMOS devices.
- The user connector has +12 and -12 volts for it so you can power your sensors.
- On-board memory programming is required to use the A/D.
- The entire system is on one standard 16 pin plug module that fits neatly inside the Apple.
- Super includes sample programs on disk.

PRICE \$319

A few applications may include the monitoring of: flow • temperature • humidity • wind speed • wind direction • light intensity • pressure • RPM • soil moisture and many more.

8 BIT, 8 CHANNEL A/D

- 8 Channels
- 8 Bit Resolution
- On Board Memory
- Fast Conversion (0.78 ms per channel)
- A/D Process Totally Transparent to Apple (looks like memory)

The APPLIED ENGINEERING A/D BOARD is an 8 bit, 8 channel, memory buffered, data acquisition system. It consists of an 8 bit A/D converter, an 8 channel multiplexer and 8 x 8 random access memory.

The analog to digital conversion takes place on a continuous, channel sequencing basis. Data is automatically transferred to on board memory at the end of each conversion. No A/D converter could be easier to use.

Our A/D board comes standard with 0, 10V full scale inputs. These inputs can be changed by the user to 0, -10V, or -5V, +5V or other ranges as needed.

The user connector has -12 and -12 volts on it so you can power your sensors.

- Accuracy: 0.3%
- Input Resistance: 20K Ohms Typ

PRICE \$129.00

SIGNAL CONDITIONER

Our 8 channel signal conditioner is designed for use with both our A/D converters. This board incorporates 8 F.E.T. op-amps, which allow almost any gain or offset. For example: an input signal that varies from 2.00 to 2.15 volts or a signal that varies from 0 to 50 mV can easily be converted to 0-10V output for the A/D.

The signal conditioner's outputs are a high quality 16 pin gold I.C. socket that matches the one on the A/D's so a simple ribbon cable connects the two. The signal conditioner can be powered by your Apple or from an external supply.

FEATURES

- 4.5" square for standard card cage and 4 mounting holes for standard mounting. The signal conditioner does not plug into the Apple, it can be located up to 1/2 mile away from the A/D.
- 22 pin, 156 spacing edge card input connector (extra connectors are easily available i.e. Radio Shack).
- Large bread board area.
- Full detailed schematic included.

PRICE \$79.00

DIGITAL INPUT/OUTPUT BOARD

- Provides 8 buffered outputs to a standard 16 pin socket for standard dip ribbon cable connection.
- Power-up reset assures that all outputs are off when your Apple is turned on.
- Features 8 inputs that can be driven from TTL logic or any 5 volt source.
- Your inputs can be anything from high speed logic to simple switches.
- Very simple to program, just PEEK at the data.
- Now, on one card, you can have 8 digital outputs and 8 digital inputs each with its own connector. The super input/output board is your best choice for any control application.

The SUPER INPUT/OUTPUT board manual includes many programs for inputs and outputs. A detailed schematic is included.

Some applications include:

Burglar alarm, direction sensing, use with relays to turn on lights, sound buzzers, start motors, control tape recorders and printers, use with digital joystick.

PRICE \$69.00

Please see our other full page ad in this magazine for information on Applied Engineering's Timemaster Clock Card and other products for the Apple. Our boards are far superior to most of the consumer electronics made today. All I.C.'s are in high quality sockets with mil-spec. components used throughout. P.C. boards are glass-epoxy with gold contacts. Made in America to be the best in the world. All products compatible with Apple II and //e.

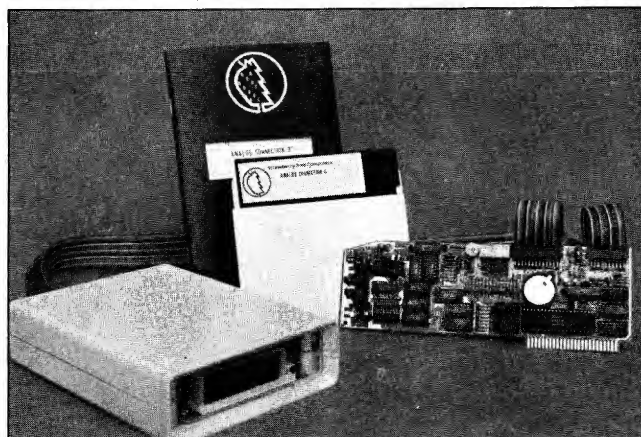
Applied Engineering's products are fully tested with complete documentation and available for immediate delivery. All products are guaranteed with a no hassle three year warranty.

West Orders Shipped Same Day
Texas Residents Add 5% Sales Tax
Add \$1.00 If Outside U.S.A.

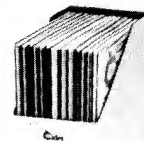
Send Check or Money Order to:
APPLIED ENGINEERING
P.O. Box 470301
Dallas, TX 75247

Call (214) 492-2027
7 a.m. to 11 p.m. 7 days a week
MasterCard, Visa & C.O.D. Welcome
No extra charge for credit cards

voltage or current sources. Data acquisition and control software is included with the card for \$490. Contact Strawberry Tree Computers, 949 Cascade Drive, Sunnyvale, CA 94087, for further information. Reader Service number is 474.



Analog Connection II for labs and industry.



MAKE IT EASY TO SAVE your copies of **inCider**®

Your magazine library is your prime reference source—keep it handy and keep it neat with these strong library shelf boxes. They are made of white corrugated cardboard and are dust resistant. Use them to keep *all* your magazines orderly yet available for constant reference.

Self-sticking labels are available for the following:

80 Micro	73 Magazine	Radio Electronics
Microcomputing	QST	Personal Computing
inCider	CQ	Byte
Desktop Computing	Ham Radio	Interface Age

One box (BX1000) is \$2.00, 2-7 boxes (BX1001) are \$1.50 each, and 8 or more boxes (BX1002) are \$1.25 each. Be sure to specify which labels we should send.

Call **TOLL-FREE** for credit card orders:

1-800-258-5473

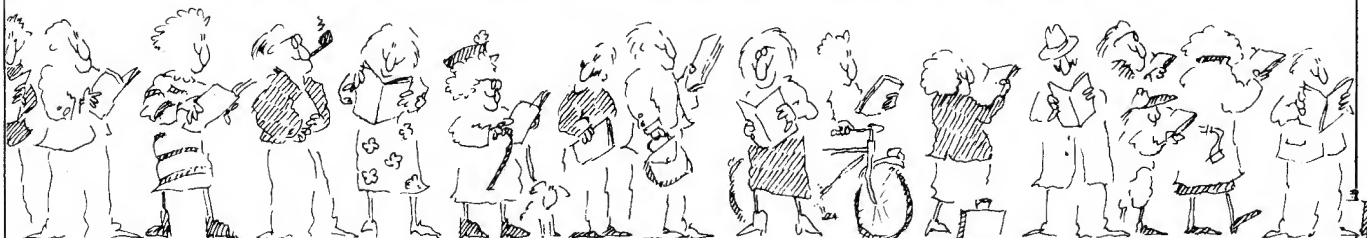
Or use the order form in this magazine and mail to:

inCider®

Attn: Book Sales, Peterborough, NH 03458

SHIPPING AND HANDLING CHARGES \$2.00 per order up to and including a quantity of eight 25¢ for each additional box ordered.

What would you do with 1,000,000 customers?

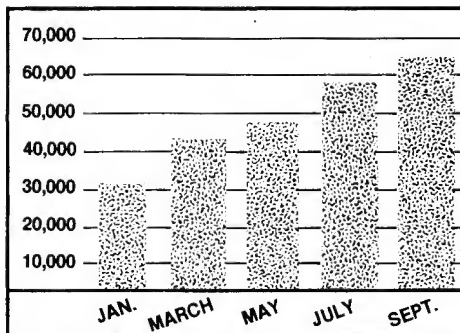


Sell **inCider** and you'll tap into a tremendous market. Over one million Apple* computers have been sold so far. And every Apple owner is looking for the kind of practical help **inCider** provides.

Of course, you won't see all of those one million customers in your store. But those that do come in are likely to become regular customers.

The type of customers you can always use more of. Our average reader is 34 years old, college educated, and earns about \$43,200 a year.

Look at the graph to see how your sales may improve.



In the last nine months, **inCider**'s newsstand sales have nearly doubled.

* Apple is a registered trademark of Apple Computer Inc.

Selling **inCider** is easy to do. We offer:

- liberal dealer discounts
- six-month, full-refund returns
- a toll free number for assistance
- a colorful poster to spur sales

Call Ginie Boudrieau, our Retail Sales Manager, to place your order today!

1 (800) 343-0728

In NH call (603) 924-9471

Or write to her at: **inCider**, 80 Pine Street, Peterborough, NH 03458.

Sell inCider.

Introducing the Most Powerful Business Software Ever!

TRS-80™ (Model I, II, III, or 16) • APPLE™ • IBM™ • OSBORNE™ • CP/M™ • XEROX™



The VERSABUSINESS™ Series

Each VERSABUSINESS module can be purchased and used independently, or can be linked in any combination to form a complete, coordinated business system.

VERSARECEIVABLES™

\$99.95

VERSARECEIVABLES™ is a complete menu-driven accounts receivable, invoicing, and monthly statement-generating system. It keeps track of all information related to who owes you or your company money, and can provide automatic billing for past due accounts. VERSARECEIVABLES™ prints all necessary statements, invoices, and summary reports and can be linked with VERSALEDGER II™ and VERSAINVENTORY™.

VERSAPAYABLES™

\$99.95

VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

VERSAPAYROLL™

\$99.95

VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information on it. If desired, totals may be posted to the VERSALEDGER II™ system.

VERSAINVENTORY™

\$99.95

VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

VERSALEDGER II™

\$149.95

VERSALEDGER II™ is a complete accounting system that grows as your business grows. VERSALEDGER II™ can be used as a simple personal checkbook register, expanded to a small business bookkeeping system or developed into a large corporate general ledger system **without any additional software.**

- VERSALEDGER II™ gives you almost unlimited storage capacity (300 to 10,000 entries per month, depending on the system),
- stores all check and general ledger information forever,
- prints tractor-feed checks,
- handles multiple checkbooks and general ledgers,
- prints 17 customized accounting reports including check registers, balance sheets, income statements, transaction reports, account listings, etc.

VERSALEDGER II™ comes with a professionally-written 160 page manual designed for first-time users. The VERSALEDGER II™ manual will help you become quickly familiar with VERSALEDGER II™, using complete sample data files supplied on diskette and more than 50 pages of sample printouts.

SATISFACTION GUARANTEED!

Every VERSABUSINESS™ module is guaranteed to outperform all other competitive systems, and at a fraction of their cost. If you are not satisfied with any VERSABUSINESS™ module, you may return it within 30 days for a refund. Manuals for any VERSABUSINESS™ module may be purchased for \$25 each, credited toward a later purchase of that module.

To Order:

Write or call Toll-free (800) 431-2818
(N.Y.S. residents call 914-425-1535)

- * add \$3 for shipping in UPS areas
- * add \$4 for C.O.D. or non-UPS areas

- * add \$5 to CANADA or MEXICO
- * add proper postage elsewhere

DEALER INQUIRIES WELCOME

All prices and specifications subject to change / Delivery subject to availability.

COMPUTRONICS

50 N. PASCACK ROAD, SPRING VALLEY, N.Y. 10977

* TRS-80 is a trademark of the Radio Shack Division of Tandy Corp. • *APPLE is a trademark of Apple Corp. • *IBM is a trademark of IBM Corp. • *OSBORNE is a trademark of Osborne Corp. • *CP/M is a trademark of Digital Research • *XEROX is a trademark of Xerox Corp.

Circle 66 on Reader Service card.

THE SECRETS OF PERFECT MEMORY: ONE AND ONE HALF EARTH DOLLARS

AT LAST: THE WHOLE
TRUTH ABOUT FLOPPIES.

Amazing book reveals
all!

How to keep from
brainwashing your disk
so it never loses its
memory.

How fingerprints can
actually damage disks.
Unretouched Kirlian
photographs of UFO's
(Unidentified Floppy
Objects)! The incredible
importance of making
copies: the Department
of Redundancy Depart-
ment—and what goes on
when it goes on! Power-
ful secret methods that
scientists claim can ac-
tually prevent computer
amnesia! All this, and
much more.

In short, it's an 80-
page plain-English,
graphically stunning,
pocket-sized definitive
guide to the care and
feeding of flexible disks.

For The Book, ask your
nearest computer store
that sells Elephant™
disks, and bring along
one and one half earth
dollars.

For the name of the
store, ask us.

*Elephant Memory Systems®
Marketed exclusively by
Dennison Computer Supplies,
Inc., 55 Providence Highway,
Norwood, MA 02062. Call
toll free 1-800-343-8413.
In Massachusetts, call
collect (617) 769-8150.
Telex 951-624.*

